The RUBBER AGE

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WILLIAM F. PFEIFFER SEES 1925 AS GOOD YEAR FOR TIRE INDUSTRY

General Manager of Miller Rubber Co. Predicts Better Demand due to Increased Car Registration—Sees Large Influx of Workers to Akron Factories

"I am 100 per cent sold on 1925," writes William F. Pfeiffer, general manager of the Miller Rubber Co., Akron, Ohio. "We have never been better set for a prosperous business period in the rubber industry. Our prosperity in 1925, I thoroughly believe, will be sound and sensible. It will not run away with us and it will continue for not only six months, but I believe, will continue for a period of years. We are now on a sound basis.

Industry on Solid Basis

"No industry in the United States has experienced what the rubber industry has in the past eight or ten years. In that period we experienced times when we had too much prosperity and not enough. We had times of extravagance and rigid economy, and the heights and depths were very high and very low. Akron has come through its inflation period, its deflation period, and is now on a solid, substantial basis where we shall make profits and make them on a lower gross than any other industry in the country.

"During the slump period not one Akron rubber industry failed and this is saying a good deal when you remember that at the time the crash came in 1920 rubber manufacturers had merchandise scattered all over the country and inventories were 50 to 75 per cent in excess of market demand. We saw raw materials tumble from 62½ cents to 12½ cents a pound, as in the case of fabric, with big stocks on hand, and on the road, not to speak of commitments.

"We had to retrench and did so by purchasing 100 per cent on the dollar and getting 100 per cent day's work from everyone in the rubber industry. In this industry we have to work.

"The country is now sold on the fact that Akron had a boom and that the boom burst. We must let all know that we are producing to give 100 per cent on the dollar and aiming to make profits on the lowest gross of any industry. When this is broadcast to tire users throughout the country they will be even more inclined to buy Akron tires.

"The United States uses about 70 per cent of the rubber of the world and of this Akron uses about 65 per cent. Akron is sure to grow. I have not the slightest doubt that we shall soon see an increase in population here of over 100,000 and not long distant. This additional population, however, will come in on a sound basis and not as it did at the

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KELLY-SPRINGFIELD TIRE REPORTS $1,525,748 LOSS

The annual report of the Kelly-Springfield Tire Co., New York, for 1924 shows gross profits of $7,255,746, as against $9,559,804 in 1923, and operating profit of $417,232, against $762,407. After crediting other income, and allowing for interest and other charges, the company reported a net loss of $1,525,748 for the year, against a loss of $1,166,284 reported in 1923.

The detailed income and expense account for 1924 and 1923 follows:

	1924	1923
Gross profits	$7,255,746	$9,559,804
Expenses	6,838,514	8,797,397
Operating profit	$417,232	$762,407
Other income	300,426	345,130
Total income	$717,658	$1,107,537
Int. charges and res.	2,243,406	2,273,821
Net loss	$1,525,748	$1,166,284

The balance sheet of Dec. 31 shows net current assets valued by the company at $13,707,507, of which $2,590,973 was cash, $6,489,818 the value of inventory and $4,626,715 accounts and notes receivable, less reserves. The current liabilities aggregated $4,429,493, including $3,000,000 notes payable to banks.

Hiring Experienced Labor

There is a slightly increased demand for experienced labor in the Akron district; rubber manufacturers are reported to be hiring more experienced men than for several months past. The employment managers are beginning to build up their forces to take care of the anticipated spring rush.

"Black Goose" Registered

The Union Power Co., Inc., Shreveport, La. recently registered in the U. S. Patent Office under Ser. No. 206,500, the familiar trade-mark, "Black-Goose" which consists of a black goose with spread wings, the words "Black Goose" and an opaque circle. The company has been using this trade-mark on its carbon black since Nov. 17, 1924.

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SEES 1925 AS GOOD YEAR FOR TIRE MANUFACTURERS

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beginning of the boom period some years ago.

"The rubber industry must expand to take care of the increasing demand for tires and other rubber goods. Everyone wants to ride on air. Everyone wants a car. We do not now consider automobiles as luxuries. The automobile business is a maker of prosperity. Their manufacture eats up basic material and this produces wealth. It converts by labor raw materials into capital. This process is the production of wealth.

"Each year more automobiles are in use despite the fact that production fluctuates. In considering tire replacements we must substract from each year's production or registration of cars the discards and consider only the growth in number of cars actually in operation. We cannot consider new cars, equipped with new tires, as probable sources for replacement under eighteen months, as tires run not one year but one and a half, two and sometimes two and a half years, before new tires are required. This is because tire production is coming closer to perfection every day.

Tire Prospects Excellent

"Akron, as I have intimated before is the center of the rubber business of the world and this great industry was never as sound as it is today. There are great opportunities. What the future promises is much. No man can measure it. There were more than three and a half million automobiles made in 1924. There are over seventeen million cars in use in the United States today; in fact more automobiles than telephones. In 1928 or 1930 it is hard to estimate the number of cars there will be in operation. There may be twenty-five or thirty million.

"All of these new automobiles will not only need tires when they leave the factory, but will increase year by year the number of cars in use and tire replacement accordingly.

"1925 is bright. It is the beginning of many prosperous years in tire manufacturing and the rubber industry generally. I am 100 per cent sold on 1925."

Firestone to Celebrate

The Firestone Tire & Rubber Co., Akron, Ohio, will celebrate this summer its 25th anniversary in business. Plans are now being made for the celebration, which will be held a few days after centennial week in Akron.

To Build Giant Zeppelin

"The Goodyear company has just begun construction of a 6,000,000 cubic foot Zeppelin," said Ernest Lehmann, vice president of the Goodyear-Zeppelin Co. upon his arrival from Europe recently. "It will be more than twice as large as the ZR-3 constructed in Germany. We expect to have it in operation by 1927 on a weekly schedule of 50 hours New York to Europe, with a return passage in 60 hours. It will be used primarily to carry mail. Within a short time a second ship of similar size will be started."

The Goodyear company recently shipped the first of six non-rigid airships ordered four months ago by the army, to Scott Field, Belleville, Ill. The ship is known as the T.C. 8 and has a capacity of 200,000 cubic feet. It measures 196 feet by 48. It is equipped with two 150 H.P. motors. The gondola has a capacity of 12 passengers. The Goodyear company is rapidly completing two more dirigibles of the T.C. type and working on three of the T.A. type, smaller than the T.C., for the U. S. Army.

Makes Offer for Howe Plant

An offer of $197,000, accompanied by a certified check for $10,000 was recently made for the factory of the Howe Rubber Co., New Brunswick, N. J. The balance of $187,000 is to be paid in cash two weeks after confirmation of the sale. A. C. Streitwolf, counsel for Charles D. Ross, receiver for the company, submitted the offer to vice Chancellor John H. Backus. Mr. Stretwolf declined to divulge the name of the party from whom the offer was received.

Fisk Rubber Elects

At the recent annual meeting of stockholders of the Fisk Rubber Co., Chicopee Falls, Mass., the following new officers were elected: Harry G. Fisk, clerk; R. B. McGaw, treasurer. The following directors were elected: R. H. Bollard, New York; Edward H. Broadwell, Springfield; William F. Cutmer, New York; Janes Dean, New York; Harry G. Fisk, Springfield; Benjamin H. Pratt, Milwaukee; R. S. Russell, Boston; and Orrin G. Wood, Boston.

Kleinert Plant Destroyed

Damage estimated at $175,000 was caused by a recent fire which started in a garage on Broadway, near Floral Park Road, Little Neck, Queens, and spread to the factory of the I. B. Kleinert Rubber Co., destroying the structure. The flames spread rapidly through the garage, a one-story stucco building, and quickly ignited the rubber factory, a two-story frame structure.

Salem at Capacity

According to Edgar A. Tinsman, president and general manager of the Salem Rubber Co., Salem, Ohio, the factory is now running at capacity. The company enjoyed an unusual volume of business in 1924 and has orders on the hooks to keep the plant on a full production basis for months to come.

"Fuze-On" Registered

The trade-mark "Fuze-On," used since last September on an adhesive compound for mending rubber goods, was recently registered in the U. S. Patent Office under Ser. No. 203,807 by the Fuze-On Rubber Co., Inc., Bath, Maine.

B. F. GOODRICH CO. TAKES OVER AMES-HOLDEN TIRE

It was recently announced that the B. F. Goodrich Co., Akron, Ohio, had purchased outright the Ames-Holden Tire & Rubber Co., Montreal. Since January, 1923, when the Goodrich company acquired a substantial interest in the Ames-Holden company, the two firms have been operating on a co-operative basis. The name of the company will be changed to the Canadian-Goodrich Co., Ltd.

Plans for a large warehouse addition to the Akron plant are being drawn. The extra storage space was made necessary by the increase in the volume of boots and shoes manufactured.

Heretofore the rubber boot and shoe industry has centered in the east around New York, and in the west at Chicago, and most of the boots and shoes made here were sent to rented storage houses in those cities for redistribution later. This, according to company officers is to be eliminated by the big new structure to be raised in Akron. Because of the seasonableness of the rubber boot and shoe industry much storage room is needed for this product.

The factories at Kitchener, Ontario, have a manufacturing capacity of approximately 5,000 tires a day. These factories have been making the Canadian Goodrich tire for the B. F. Goodrich Company.

Re-elect Victor Directors

At the recent annual meeting of stockholders of the Victor Rubber Co., Springfield, Ohio, the present directors were re-elected as follows: H. S. Berlin, H. H. Durr, Otto Miller, Allard Smith, Fred R. White, H. J. Roben and W. L. Timmons. Officers re-elected were H. S. Berlin, president; W. L. Timmons, vice president; and H. H. Durr, secretary and treasurer. Business done in 1924 was much better than in the previous year, the stockholders were told.

J. E. Mayl Joins Goodrich

J. E. Mayl, formerly a western division sales manager for the Firestone Tire & Rubber Co., Akron, has been appointed by the B. F. Goodrich Co., Akron, as head of its bus transportation department. Mr. Mayl was with the Firestone Tire & Rubber Co. 14 years, during which time he served as New England district manager and later as eastern division manager.

To Make Tire Accessory

The Kex Manufacturing Co., Cleveland, Ohio, was recently incorporated for $1,000,000 to manufacture a puncture-proof tire accessory.

Pharis Output 2,000 a Day

The Pharis Tire & Rubber Co., Newark, N. J., is at the present time manufacturing 2,000 tires a day but indications are that this output will have to be increased. The company recently began the manufacture of its Super Giant Oversize Cord Tire.

USE OF CRUDE INCREASED IN LAST QUARTER OF '24

Consumption of crude rubber in the third quarter of 1924 by 206 manufacturers reporting to the Rubber Association of America was 50,988 tons, against a consumption of 45,617 tons in the last quarter. Consumption of scrap rubber by seven reclaimers was 17,420 tons and by rubber manufacturers 13,924 tons, a total of 31,344 tons. Production of reclaimed rubber in the last quarter was 25,263 tons, against 16,678 tons in the third quarter.

The value of tires shipped in the last quarter was $120,361; and of tubes, $21,019. The value of solid tires shipped in this quarter was $6,889. $4,133 was the value of tire sundries shipped in the quarter. Mechanical rubber goods to the value of $17,067 were shipped in the last quarter of 1924; boots and shoes to the value of $33,286; insulated wire to the value of $7,885; druggist sundries to the value of $3,246; hard rubber goods to the value of $3,233; and heels and soles to the value of $5,723. Shipments of miscellaneous rubber goods not otherwise mentioned were valued at $3,703. The grand total of rubber products shipped in the fourth quarter of 1924 was $233,404, against $242,565 in the third quarter.

Inventory of crude rubber in the United States and bound for U. S. ports on Dec. 31 showed 40,166 tons of plantations and 2,625 tons of Para; and 1,868 tons of other rubber to the account of manufacturers; 9,212 tons of plantation; 847 tons of Para; and 113 tons of other rubber to the account of importers and dealers. A total of 54,831 tons of crude rubber was on hand and afloat to U. S. ports on that date.

Polkase Reorganized

The Polkase Manufacturing Co., New York City, manufacturers of rubberized specialties, recently announced that H. W. Quinby, E. C. Paton and V. Deitz have acquired an interest in the company. These gentlemen were formerly with the I. B. Kleinert Rubber Co. for periods ranging from 15 to 21 years. The name of the Polkase company will be changed to the Kase Rubber Co., with N. Kase as president. Offices were moved to 935 Broadway, New York, about Feb. 1.

Fisk Cuts Wages

A reduction of ten per cent was recently placed in effect at the Ninigret plant of the Fisk Rubber Co. at Pawtucket, R. I. The reduction effects about 250 workers.

Goodrich Gets Ball Patent

William G. Geer has assigned to the B. F. Goodrich Co., Akron, Ohio, U. S. Patent No. 1,524,428 covering the method of coating golf balls which comprises mixing balata with sulphur, an accelerator of the dithio carbonic acid series and a light-colored pigment, forming the mixture into cover parts and applying said parts to a center of tense, vulcanized rubber windings, molding and partially curing the cover on the ball in a heated mold, removing the ball for the mold and allowing the cure to continue in air at a lower temperature.

To Sell McGraw Plant

W. H. Marlatt, Receiver of The McGraw Tire & Rubber Co., East Palestine, Ohio, is offering the plant and real estate of the company for sale.

The property is of modern brick construction with 136,680 square feet of floor space and equipped with modern machinery to a capacity of 3500 tires and 3500 tubes per day.

The location is fifty miles west of Pittsburg and sixty miles east of Akron, with splendid skilled labor, shipping and water and fuel facilities.

BRITISH DUNLOP FORMS SERVICE DEPARTMENT

The extension of automotive road transport and the growing popularity of pneumatic over solid tires are the reasons given by the Dunlop Rubber Co., for the establishment of a special department at Fort Dunlop, England, to deal exclusively with the question of tire and wheel equipment for public service vehicles of every description. The concern says the formation of this department was absolutely necessary.

The new organization will deal with all questions relating to pneumatic or solid tires or wheels for buses, charabancs, and for the larger fleets of goods transport vehicles. It will be controlled by W. J. McCormack as sales manager.

Service Not Surplus—

The complete output of reclaimed rubber from our plant is for the exclusive use of our many customers. Every pound is shipped direct to outside rubber factories.

These factories *cannot* depend on surplus lots. They *must* have a steady supply and they *must* have the same uniform quality year in and year out.

Thus by using our BISON SUPER RECLAIM, BUFFALO, BLACK DIAMOND or any of our other standard grades, you are assured of prompt shipments, uniform quality and steady supply at all times.

Our business is to supply you with reclaimed rubber—it is not a side line with us!

U. S. RUBBER RECLAIMING CO., Inc.

100 E. 42nd. St., N. Y. Factories: Buffalo, N. Y.

"42 *Years Serving the Industry Solely as Reclaimers.*"

1925 WILL BE GOOD YEAR FOR WORLD-WIDE DUNLOP

Although world-wide Dunlop in 1924 made the most remarkable strides in its history, the indications are that 1925 will see even greater progress, say officials of the company. British Dunlop, in order to meet the increased demand for tires, has under construction plant facilities that will enable it to increase by 50 per cent its production of Dunlop casings.

The same condition prevails among the Continental units of Dunlop, despite the fact that last year these institutions recorded an increase of 100 per cent in their business, due in a great measure to the recovery of France and Germany after the lean years of the war. Both the French and German units are planning expansion in order to cope with the growing Dunlop demand.

Pointing toward a $20,000,000 volume for 1925, American Dunlop is keeping pace with the growth of its allied organizations. To meet the monthly requirements of 125,000 tubes the Buffalo plant already is installing new equipment and extending the limits of its Tube Shop to the full areas provided for in the original construction of the plant.

American Dunlop's expansion has not, however, been confined to the manufacturing organization. Three new distributing warehouses have been opened recently, one in Omaha, Nebr., one in Richmond, Va., and the third in Oklahoma City, Okla. Further extension of the Dunlop Sales organization was made possible by the opening at Minneapolis, Minn., of a new Dunlop Sales Division to serve the northerly states of the Middle West.

Hicks Rubber Organized

The Hicks Rubber Co., Waco, Texas, was recently incorporated to manufacture rubber products. Authorized capital is $150,000. Incorporators are D. N. Hicks, E. A. Hicks and D. T. Hicks.

Mason Earns $9,211,000

The Mason Tire & Rubber Co., Kent, Ohio, did $9,211,000. worth of business in 1924, showing a gain of two million dollars, according to a report made by President W. A. Cluff at a meeting of executives at the Franklin Hotel, Kent, Feb. 7, which was addressed by Congressman Martin L. Davey of the 14th district of Ohio, and E. St. Elmo Lewis, Detroit author and advertising man.

George H. Smoots, who recently came to Kent from the Pacific Coast, was introduced as the manager of the new department of branch operations.

Reports showed steady gains in business since 1922 and production will be increased at both the Kent and Bedford plants, and 1925 is expected to be the most profitable in the nine years' history of the Mason Tire & Rubber company.

Balloon tires soon will be added to the Mason line.

Banner Rubber Prosperous

The Banner Rubber Co., 3553 Wazee St., Denver, Col., recently installed $20,000 worth of machinery to care for increased demands. According to officials, orders are on hand for floor coverings and shoe soles to the full capacity of the factory for some time. In addition to these two products, the company manufactures radiator hose.

Foote Appoints Agents

Foote Bros. Gear & Machine Co., Chicago, Ill., recently announced the appointment of F. Somers Peterson Co., San Francisco, and the Thomas Machinery Co., Los Angeles, as its agents for northern and southern California respectively. Other offices of the company on the Pacific Coast are in Seattle and Vancouver.

Dental Rubber Registered

"Flex-O-Tite," the trade-name for a dental rubber for use in the manufacture of dental plates, has been registered in the U. S. Patent Office under Ser. No. 206,241 by Charles H. Kettles, Indianapolis, Ind.

Rubber Aprons Registered

The trade-mark "Art Crystal" was recently registered in the U. S. Patent Office under Ser. No. 206,501 by the Vernart Manufacturing Co., New York, N. Y. The company has been using this trade-mark on their rubber and fabric aprons, children's rubber bibs, and rubber bathing caps since 1917.

SEVERAL CORPORATIONS SUPPORT FELLOWSHIPS

Several corporations in the rubber industry or catering to this industry support fellowships. The following corporations support these fellowships at one or more universities: E. I. DuPont de Nemours & Co., Wilmington, Del., Brown U., U. of California, California Institute of Technology, U. of Chicago, Columbia U., Cornell, U. of Delaware, Harvard, U. of Illinois, Johns Hopkins, Lafayette, Mass. Institute of Technology, U. of Michigan, U. of Minnesota, Ohio State U., Princeton, U. of Virginia, U. of Washington, U. of Wisconsin, Yale. The Firestone Tire & Rubber Co., Municipal U. of Akron. Goodyear Tire & Rubber Co., Municipal U. of Akron, Grasselli Chemical Co., Case School of Applied Science, Cornell, Indiana, Mass. Institute of Technology, Oberlin, Ohio State U. National Aniline & Chemical Co., University of Michigan. United States Rubber Plantations, Inc., U. of Michigan.

R.G.A. Campaign Successful

(Special to THE RUBBER AGE*)*

Propaganda secretary G. R. Crowther of the Rubber Grower's Association of London is still finding new and effective ways of pushing the sales of plantation crepe rubber soles and heels. Hundreds of circulars have been enclosed in issues of little-known journals such as the *Police Review Post*, and *On and Off Duty*. *Post* is the organ of the British postmen, while *On and Off Duty* circulates among policemen.

Mr. Crowther reports that since this latest effort there has been a brisk demand for policemen's and postmen's shoes soled with plantation crepe.

An R. G. A. representative will leave England shortly to start a propaganda campaign in South Africa.

Registers Tire Brand

The Racine Horseshoe Tire Co., Racine, Wis., recently registered in the U. S. Patent Office under No. 194,386 the trade-mark "The Loop Tire." The company has used this trade-mark on tires and tubes since Sept. 1, 1923. This registration is not subject to opposition.

The Carter Bell M'f'g Co.
Highest Grade
RUBBER SUBSTITUTES
White, Brown & Black
150 Nassau Street New York

EMBOSSING CALENDERS
For Artificial Leather, Oil Cloth, Carriage and Automobile Covers
DRYING MACHINES
with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings
The Textile-Finishing Machinery Co.
OFFICE, No. 83 EXCHANGE PLACE
PROVIDENCE, R. I.

B. J. LEMON TELLS OF WORK OF U. S. RUBBER TO IMPROVE BALLOON TIRES

Design in which Tread Conforms to a Profile to which Tire Wears at Normal Load and Inflation Helps Stabilize Front-End and Reduces Sidesway and Strain on Bead

"Tire designers have been put to the test to overcome uneven balloon tire tread wear. The solution demanded a thorough study of the mechanics of tread movement and of the wear of a moving resilient material under load distortion," says B. J. Lemon, of the research division of the United States Tire Co., in a paper delivered at the annual meeting of the Society of Automotive Engineers in Detroit the latter part of January and printed in the February number of the society's journal.

"Wear of a uniformly compounded moving surface is dependent on profile, pressure and velocity. Slow-motion pictures showed a complex uneven balloon-tire tread velocity. We feel it to have been demonstrated satisfactorily that tread pressure and velocity and wear therefrom can be slowed down by the natural-wear profile tire.

Special Tread Perfected

"We have adopted a design in which the tread conforms to a profile to which the tire wears at its normal load and inflation. The natural-wear profile tread offers a greater road-contact area, a lower tread pressure and a reduced tread movement. Tests extending over a period of six months indicate that this tread produces longer and more even wear over a larger range of inflations, helps stabilize front-end unbalance and reduces sidesway and strain on bead and rim.

"Our own opinion is that the car owner still needs a non-skid design in larger doses than 50 per cent of the tread-contact area. We designed and tested our quota of treads in the search for one to give maximum traction and flexibility in all directions, stability, ease of steering and uniform wear over a reasonable range of inflation pressures. The result was the present Royal Cord balloon tread built to the natural-wear profile and having one central rib flanked on each side by three rows of sharp-edged blocks.

"The number of plies of fabric in balloon tires depends on the size, strength and spacing of the cords and the load to be carried. Tire manufacturing practice discloses differences mainly in the size and spacing of the cords, but shows practically no difference in the number of plies, due to economic reasons. Regardless of the number of plies and the size and spacing of the cords, sufficient fabric must be used in all tires to maintain a safe bursting-strength factor. On the other hand, because of constant flexing and the heat generated therefrom, and to secure a riding quality demanded of balloon tires, the number of plies and amount of cotton must be kept at the lowest point consistent with the strength requirement. Ninety per cent of the car manufacturers use four-ply balloon tires.

Six Plies Not as Flexible

"In regard to ease of riding, six plies of fabric will not afford the flexibility of a four-ply tire of the same sectional size, because of the stiffer carcass and because higher inflations are advocated and logical. But riding comfort is not determined solely by tires. In the higher-priced cars, more care can be given to spring suspension and to the coordination of springs with tire inflations; therefore, in such cars, it may be possible to adopt a stiffer tire, run at higher pressure, and still obtain satisfactory riding. Tire equipment at present consists of six plies of fabric in tires for a small number of such cars. This, however, does not mean that the four-ply, large-section tire is faulty because it is large. On the contrary, 7.30-in. four-ply tires are giving remarkable service when used under loads and inflations for which they are designed."

HOW MANY FORMULAE DO YOU NOW USE?

By slight changes I may be able to reduce the number of compounds used in your plant thus saving you many dollars in a year.

FREDERICK J. MAYWALD, F.C.S.
Rubber Technologist
5 William St. Belleville, N. J.

Inland Rubber in Suit

A suit and counter-suit seeking total damages of $225,000, between the Inland Rubber Co., Chicago, Ill., and the Salmon Falls Manufacturing Co., Boston, Mass., went on trial recently before Judge Brewster in Federal Court at Boston. The Inland company is suing the other manufacturer for $150,000, alleging that it suffered a monetary loss and loss of reputation by using a fabric furnished by the Salmon Falls Manufacturing Co. in the manufacture of tires. The Salmon Falls company is suing for $75,000, on an alleged breach of contract.

Safety Tube Organized

The Safety Tube Co., Inc., Brooklyn, N. Y., was recently incorporated to manufacture rubber tires and other rubber goods. Authorized capital is $50,000. Incorporators are I. Trautman, 1731 56th St.; E. E. Bernard, 668 10th St.; and O. I. Mosser, 8 Garden Place, all of Brooklyn.

Bay Shore Rubber Formed

The Bay Shore Rubber Tire Works, Queens, New York City, was recently incorporated by S. A. Pode, S. and R. Gellar. The firm will manufacture tires.

STOCKS
Niles, O.
Akron
Buffalo
Cleveland
Cincinnati
Toledo
Indianapolis
St. Louis
Omaha
Dallas

Use More Zinc Oxide
Be Sure It Bears This Label
AZO ZINC OXIDES
AMERICAN ZINC SALES CO.
DISTRIBUTORS FOR
AMERICAN ZINC, LEAD & SMELTING CO.

STOCKS
New York
Philadelphia
Boston
Trenton
Montreal
Chicago
Louisville
San Francisco
Los Angeles
New Orleans

To Launch New Tennis Ball

(Special to THE RUBBER AGE*)*

An arrangement has been made for the amalgamation of interests between the English Dunlop Rubber Co., Ltd., and F. A. Davis, Ltd., by which the latter concern becomes distributor of a new tennis ball to be manufactured by the Dunlop company, thus effecting a complete linking-up between manufacture and distribution. Under this arrangement Sir Geo. Beharrell, L. V. Kenward, and A. E. Penfold, of the Dunlop Co., join A. H. Riseley, H. Hare, and R. Hughes-Buller as directors of F. A. Davis, Ltd.

The new tennis ball is a very unconventional novelty. Following the successful experiments of the Mercedes Co., in Germany in filling tires with nitrogen, this gas has been used to fill the new ball. It is the invention of Albert E. Penfold, technical expert at Fort Dunlop, who created the "Maxfli" golf ball. Mr. Penfold says his aim has been as far as possible to avoid the present loss of air owing to leakage through the joints, the plug, and the rubber wall itself. He claims the ball to be airtight. Specimens have been offered to the English and other Lawn Tennis Associations for approval, and a world record is said to have been set up in the widespread application for patents from every civilized corner of the globe.

Gleasonite Products Formed

The Gleasonite Products Co., Boston, Mass., was recently incorporated with an authorized capital of $500,000, and 2,000 shares of no par value. The company will manufacture rubber products. Incorporators are Max Brown of Boston; Frederick J. Gleason of Cambridge; and George F. Kerr of Newton Highlands, Mass.

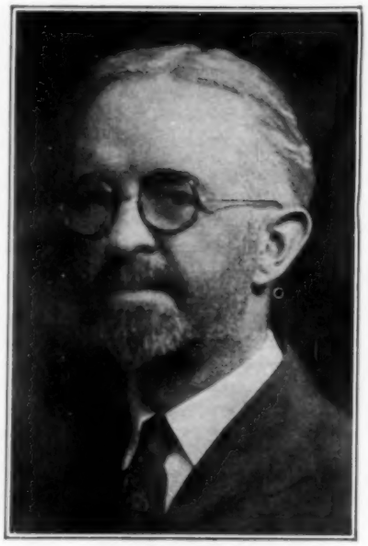
Falls Doubled Sales

M. J. O'Donnell, president of the Falls Rubber Co., Cuyahoga Falls, Ohio, recently announced that sales for 1924 increased 54 per cent. He reported total sales of $2,754,631. The sales turnover was 7.3 times or once every 37 days.

At the annual meeting the following officers and directors were elected: M. J. O'Donnell, president and treasurer; C. F. Bailey, vice president; J. O. King, vice president; G. D. Kratz, vice president; O. C. Nelson, secretary; W. P. Cline, assistant secretary and assistant treasurer; and George P. Comey, George F. O'Donnell and J. N. Hahn, directors.

Ashcroft Joins Partridge

R. W. Ashcroft, formerly advertising and sales promotion manager of the Dominion Rubber System and the United States Rubber Co., who returned to Canada some years ago to join the late



R. W. Ashcroft

T. H. Rieder in his Ames-Holden rubber enterprise, is now associated with the F. E. Partridge Rubber Co., and the Northern Rubber Co. whose head offices and factories are at Guelph, Ontario.

Mr. Ashcroft has been well known to the rubber trade of Canada, and the U. S., and abroad, for over a decade. He was, for many years, in charge of Mark Twain's business affairs, and also acted as his publicity manager. He was an intimate friend of the humorist, and always accompanied him on his trips abroad.

I.R.M.A. Holds Luncheon

(Special to THE RUBBER AGE*)*

The India Rubber Manufacturers' Association of Great Britain held its annual luncheon at the Midland Hotel, Manchester, toward the end of January. Among the prominent speakers were Lord Colwyn, the Lord Mayor of Manchester, the Mayor of Salford, James Tinto of the Greengate and Irwell Rubber Co., and Alexander Johnstone, of the North British Rubber Co.

The most important speech was undoubtedly that made by Mr. Johnstone, who stressed the need for cooperation in the rubber industry, and dealt at some length with the organization of the I.R.M.A., which he believed should be organized according to branches of production rather than geographically. A committee is at present sitting to revise the constitution of the association in order to divide it into sections covering each branch of manufacture separately. In this connection it is interesting to note that the British Rubber Tire Manufacturers' Association has wound itself up, and the I.R.M.A., as the primary controlling organization in Britain, is about to form a tire section.

Firestone Gives Scholarship

A scholarship, which entitles the winner to attendance at any college or university in the United States, with tuition, room, board, books and special fees paid by the doner, is offered through the Highway Education Board, Washington, D. C., by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio. This prize, estimated worth at least $4,000. to the winner, will be awarded to the high school student who submits the best Essay on "Economics Resulting from Highway Improvement."

This is said to be the largest single educational award offered in this country.

"Wear-Well" Registered

C. Kenyon Co., Inc., Brooklyn, N. Y., has registered in the U. S. Patent Office under No. 194,711, the trade-mark "Wear-Well" which it has used since last November on its tires and tubes. This registration is not subject to opposition.

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CRUDE RUBBER IMPORTS INCREASED LAST MONTH

When compared with December during which 24,380 tons of crude rubber were imported, importations for January showed an increase, according to statistics recently issued by the Rubber Association of America. Total shipments of plantations to the United States totaled 28,480 tons, including 10,916 tons from Singapore, 3,518 tons from Belawan-Deli and 2,929 tons from London. Shipments of Africans totaled 325 tons; Centrals and Guayule 166 tons and Paras, 989 tons, a total of 29,960 tons. In the month of January, 1924, 21,611 tons were imported.

New York received 24,655 tons, Baltimore 1,786 tons, Boston, 929 tons and Philadelphia, 322 tons, making a total of 27,692 tons shipped to Atlantic ports. Shipments to Pacific ports totaled 788 tons, including 765 tons to Los Angeles and 23 tons to Seattle.

Northern Rubber Elects

Dr. A. A. Kohler of Akron and W. E. N. Hemperly of Massillon were newly elected to the board of directors of the Northern Rubber Co. of Barberton at the annual stockholders' meeting, Feb. 11, at which time arrangements were made to increase production to take care of improved business conditions. Other directors reelected were L. J. Schott, Jr., Owen Moynihan, Edmund Shaw, L. J. Schott, Sr., of Akron, and Stanley M. Baltzley, Frank M. Siffert, P. H. Snyder of Massillon, and F. M. Howard of Columbus.

Tracy Pushing New Tire

R. B. Tracy, eastern sales manager of the Henderson Tire & Rubber Co., Inc., was in New York this past week launching the New Henderson Classic Cord Dual Service Tire. This tire has a block flat tread, side wall protection and corrugated strip on the top of the tread and this tire is to be built in truck and pleasure car types. The factory has lately installed new set of steel molds for building these tires and is now turning out more tires than it did in any time since the start of the factory, many years ago.

Vaughan Quits Seiberling

W. A. M. Vaughan recently announced his resignation as treasurer of the Seiberling Rubber Co., Barberton, Ohio, to become vice president of the First Trust & Savings Bank, Akron.

Gillette Production High

The Gillette Rubber Co., Eau Claire, Wis., is now manufacturing 2,000 tires and 3,500 tubes a day, the heaviest production in its history. Indications are that this output will have to be increased. A force of 600 is working in three eight-hour shifts at the factory.

MANSFIELD TIRE ORDERS $100,000 NEW EQUIPMENT

Steadily increasing business has made it necessary for the Mansfield Tire & Rubber Co., Mansfield, Ohio, to order $100,000 worth of new equipment which will be installed within the next two weeks. The new equipment will double the capacity of the factory. The company intends to spend at least $250,000 this year on national advertising.

Included in the equipment ordered is a 350 h.p. motor, two friction calenders, two mills, a fabric cutter, 22 vulcanizers for curing tires. The capacity of the factory when the new equipment has been installed will be 4,200 tires and 5,000 tubes a day. According to G. W. Stephens, president and general manager, business for 1925 will exceed that of last year by at least 40 per cent. Sales for the year are expected to total $8,500,000. The company employs 858 persons, including 65 employed in the office and 54 salesmen.

Crude Rubber Firm Formed

The Crude Rubber & Foreign Produce Corp., New York City, has been chartered at Albany with a capital of 2,500 shares $100 par value preferred stock and 10,000 shares non par value common stock to deal in rubber products. J. B. Baer, V. E. Gatz and N. F. Joyce, 2 Rector St., New York City are the directors and subscribers. J. B. Baer, 2 Rector St. is attorney for the corporation.

Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

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AND PRINCIPAL FOREIGN CITIES

GOODYEAR MAY PAY BACK DIVIDENDS IN NEW STOCK

Directors of the Goodyear Tire & Rubber Co., Akron, Ohio, are considering a plan to issue new common stock for the dividends of about $30 a share that are owed to stockholders on the $65,079 seven per cent preferred. Under this plan preferred stockholders would be given 40 shares of common stock for every 100 shares of preferred now held.

An arbitray value of $75 a share has been placed on the common stock.

To carry out the plan, 400,000 additional shares of common would have to be issued. By eliminating the payment of back dividends in cash on the 650,796 preferred shares, the company would save about $19,700,000. In addition to wiping out back dividends on the preferred stock through issuance of the new stock, the company plans to resume dividends at the rate of $7 annually on the preferred stock.

To Increase Capital

The Century Rubber Co., Wadsworth, Ohio, at its annual meeting held recently voted to increase its capital stock from $25,000 to $60,000. The company, which manufactures toy balloons, expects to purchase land adjoining its factory on Mechanic St. as a site for a new fireproof building. The new officers are Otto Harp, president; H. C. Dibble, vice president; Dr. M. W. Everhard, secretary-treasurer.

Schrader Announces Changes

It was recently announced by A. Schrader's Sons, Inc., Brooklyn, N. Y., that W. J. Kirkpatrick, formerly service manager, has been appointed manager of the Akron branch, succeeding F. F. Meyers.

W. J. Kirkpatrick

A. G. Underwood

A. G. Underwood, formerly accessories sales manager of the B. F. Goodrich Rubber Co., Akron, recently resigned to accept a position in a similar capacity with the Schrader company.

OFFER OF $248,225 FOR BURDICK PLANT ACCEPTED

A cash offer of $248,225 submitted by H. G. Steinbrenner for the factory and property of the Burdick Tire & Rubber Co., Noblesville, Ind., has been approved by Harry C. Sheridan, referee in bankruptcy. The interests which Mr. Steinbrenner represents plan the installation of $200,000 worth of new machinery. The plans call for a production of between 1,000 and 1,500 tires per day. The factory is being renovated for the installation of the new equipment. A new name for the company has not yet been chosen.

Vulcanizer Patented

John W. Hughes, Oakland, Calif., is the inventor of a tire vulcanizer which was recently granted U. S. Patent No. 1,524,866. The apparatus comprises a frame with sections that abut each other to form an opening, a supporting table and a mold adapted to fit the opening and be supported on the table. The mold comprises annular matrices and annular bead ring sections which fit the matrices. The mold is designed to encompass the tire and the apparatus is provided with means for compressing the mold sections against the tire. The patent has been assigned to the Rubber Products Corp., Oakland, Calif.

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SAN FRANCISCO MAY PAVE BUSY ROADS WITH RUBBER

Timothy Reardon, president of the San Francisco Board of Public Works recently submitted a plan for paving certain downtown sections of the city with rubber. Mr. Reardon's proposal was prompted by communications from taxpayers who called his attention to successful experiments that had been made with rubber paving in Chicago. The suggestion will receive the serious consideration of the city engineers.

Glove Firm Organized

The Paracord Co., Inc., has been organized at Johnson City, N. Y. to manufacture rubber gloves. The company was recently chartered at Albany, with a capital of $100,000. The directors and subscribers are: C. F. Johnson, Jr.; H. E. Chrisfield, Johnson City; and J. W. Matthaei, Binghamton. B. L. Babcock of Endicott is attorney for the new firm.

Open Marathon Factory

The Goodyear Tire & Rubber Co. reopened the former Marathon factory at Cuyahoga Falls, Ohio, Feb. 15, it was announced by C. E. Baylor, superintendent. Present plans call for the employment of 400 men and the running of three eight-hour shifts. Production schedules call for 1,000 tires a day. No tubes will be manufactured at this plant. In addition to tires, the factory will manufacture belts, golf bags, traveling bags and a number of other "flex-hyde" products. In hiring men, Mr. Baylor has given preference to former Marathon employees.

Mohawk Earnings Good

The Mohawk Rubber Co., Akron, announced a profit of $343,656. for 1924 at the annual stockholders meeting in February. This earning is equal to $10.18 on each share of common stock. The production of Mohawk cord tires shows a steady increase which will be raised to 1400 tires daily this year.

S. S. Miller was reelected president with the following officers: Francis Seiberling, vice president; H. H. Mc Closkey, secretary and comptroller; R. E. Block, treasurer; H. H. Matz, assistant treasurer; and J. F. Jones, sales manager.

The directors are S. S. Miller, Francis Seiberling, Morris E. Mason, R. M. Pillmore, H. L. Rose, C. W. McLaighlin, G. A. Parker and H. Lloyd Williams.

Sanitas Rubber Formed

The Sanitas Rubber Products Corp., New York, N. Y., was recently chartered with a capital of 750 shares of no par value. The firm will manufacture various rubber products. Incorporators are H. M. Hart, A. G. Thorne, C. A. True, 27 Cedar St., New York and A. E. Schonberger, 2634 E. 14th St., Brooklyn, N. Y. L. R. Bachner, 27 Cedar St., is the attorney for the new company.

PRODUCTION OF BALLOONS INCREASED IN DECEMBER

The recent statistical bulletin of the Rubber Association indicates an increase in December tire production over that of November. December production of balloon tires was 468,610, the preceding month showing an output of 440,184; inventory is reported as 922,956 against 905,821 for November, with shipments of 453,296 against 440,584 for November. Production of low pressure inner tubes was 444,794 in December, compared with 375,300 in November; inventory was 870,383, against 886,066 and shipments totaled 427,111, against 409,939. These figures represent the reports of 52 companies.

Production of cord tires in December was 1,953,218, inventory 3,233,559 and shipments 1,824,205. Inventory and production are in excess of the figures for November, but shipments for December are below that of the previous month.

In December 1,016,045 fabric casings were produced, as compared with 977,843 in November; inventory was 1,413,874 and shipments 829,932. Inventory for December was greater than that for November, with slight increase in shipments.

Consumption of cotton fabric in December was 12,171,828 lb., the November figure being 12,190,814 lb. This makes the total consumption for the twelve months 142,415,356. The crude rubber consumption for December was 38,956,246 lb. against 39,812,268 for November.

What is Tar?

[*For answer see our advertisements in the June 25, July 25, Aug. 25, Sept. 25, Oct. 25, Nov. 25 issues of* THE RUBBER AGE]. Reprints furnished on request.

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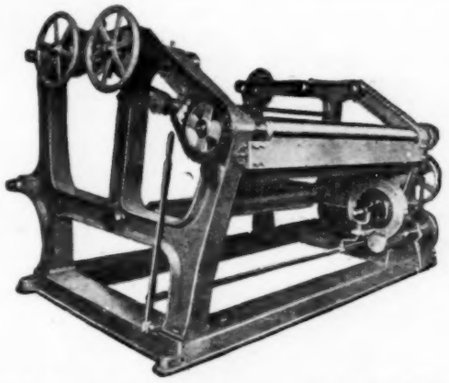

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FIRESTONE FORECASTS GOOD TRADE FOR 1925

A very bright outlook for the tire industry and general business in 1925 was predicted recently by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio. He declared that a conservative estimate of sales of automobiles this year is 3,500,000 cars.

"Many factors have entered into the bright outlook for 1925," Mr. Firestone said. "The farming situation grows brighter every day. Another force that will help American automobile and tire manufacturers in particular and American industry in general is brightening of the European skies. When the buying power of Europe is re-established and foreign exchange stabilized we will find our friends abroad in a position to purchase American products on a vastly increased scale.

"I should say that the picture for 1925, as a whole, is very encouraging. This opinion is not mine alone, but one that I have formed from reports from representatives in all parts of the world and from men who have made a close study of economic conditions."

M.A.M.A. Elects Officers

E. P. Chalfant, chairman of the board of the Gill Manufacturing Co., was elected president of the Motor & Accessory Manufacturers Association at the first meeting of the new board of directors held in New York City recently. He succeeds G. Brewer Griffin, manager of the automotive division of the Westinghouse Electric & Mfg. Co., who remains a member of the board.

Mr. Chalfant, the new president, has for several years been a director of the association and has served as chairman of the Foreign Trade Committee and of the Show Committee of the Association, which cooperates with the National Automobile Chamber of Commerce in the conduct of the National Automobile Shows. He is also president of the Rotary Club of New York City.

H. L. Horning was elected first vice-president. He is secretary and general manager of the Waukesha Motor Co., of Waukesha, Wis., and is president of the Society of Engineers. C. H. Flinterman, general manager of the Michigan Steel Casting Co., Detroit, is second vice president. Eugene B. Clark, president of the Clark Equipment Co., of Buchanan, Mich., was elected third vice-president.

L. M. Wainwright, president of the Diamond Chain & Manufacturing Co., of Indianapolis, was re-elected treasurer, and J. M. McComb, vice-president of the Crucible Steel Co. of America, was retained as secretary and assistant treasurer.

At the annual meeting of the association representatives of the member companies elected directors to fill four expired terms. Only two changes occurred, M. B. Ericson, treasurer of the Biflex Products Co. of Waukegan, Ill., and H. W. Chapin, president of the Brown-Lipe-Chapin Co., of Syracuse, N. Y., were elected to the board to replace E. P. Hammond, president of the Gemmer Manufacturing Co., and A. W. Copland, president of the Detroit Gear & Machine Co., both of Detroit. E. P. Chalfant, later elected president, and C. E. Thompson, president of the Steel Products Co., of Cleveland, were re-elected to the board. Others on the board at present, in addition to those already named, are A. H. D. Altree, vice-president of the American Bosch Magneto Corporation, of Springfield, Mass., and W. O. Rutherford, vice president of the B. F. Goodrich Co. of Akron.

R. B. CRANE ACQUIRES INTEREST IN AUBURN

Announcement was recently made of the purchase of a substantial interest in the Auburn Rubber Co., Auburn, Ind., by R. B. Crane, of Chicago. Mr. Crane has been elected vice-president and general sales manager, thus returning to his first business connection.

R. B. Crane

Mr. Crane is well known in the rubber industry. He was for years a divisional manager in the Ajax and Racine Rubber companies. Later he became vice-president and general sales manager of the Cooper Corp., Cincinnati, Ohio.

The Auburn Rubber Company, of which A. L. Murray is president, is one of the pioneers in its field. In addition to the manufacture of a complete line of automobile tires, tubes and accessories, it turns out hard rubber goods, including a patented sole for shoes, labeled U-Stik-On and a trade-marked rubber heel.

Butcher Agent for Derby

The Derby Oxide & Colour Co., Ltd., Rugeley Staffs, England, one of the oldest exporters to this market, have appointed the L. H. Butcher Co., Inc., New York, as their exclusive American distributors.

"Derby quality" has always been an international standard for fineness, purity and richness. Their specialties are, indian, purple, ventian, turkey, tuscan, black, brown, and yellow oxides of iron; Persian Gulf and Spanish oxides and genuine ivory black.

INDIA REPORTS 54 PER CENT SALES INCREASE

Total sales of the India Tire & Rubber Co., Akron, Ohio, during 1924 showed an increase of more than 54 per cent over sales during 1923, according to the annual report presented at the recent annual meeting. Sales for 1924 aggregated $3,021,767., an increase of $1,061,454.

J. M. Alderfer, S. W. Aldefer, C. Fenton, A. T. Kingsbury, W. G. Lerch, C. A. Schwan, P. C. Searles, H. L. Williams and J. K. Williams were elected directors for the ensuing year.

The report showed the reserve and surplus of the company had been increased by more than $326,882 and that sales had been greatly increased with a small increased expense of less than 25 per cent over the total for the previous year. A total of 6¼ per cent was paid on common stock during 1924. It was stated that when the new addition to the plant is completed the company will be in a position to manufacture between 1,500 and 1,800 tires a day, and that this production has been practically all contracted for during the next year.

Reducing Fabric Registered

The Model Brassiere Co., Inc., New York, N. Y., recently registered in the U. S. Patent Office under Ser. No. 201,365, the trade-mark "Rubbertricot". The name will be used for a water and air resisting fabric especially adapted for figure-reducing garments.

INFORMATION EXCHANGE

The inquiries listed below have already been answered but additional information from our readers will be welcome. Mention the reference number in correspondence.

Engraving Machine

(Reference No. 133) Could you supply us with the names of manufacturers of a machine for engraving names on tire molds?

* * *

Rubber Belts

(Reference No. 134) We should be obliged if you could tell us the name of a manufacturer of composition rubber belts as used by men for tennis and other sports.

* * *

Druggists Sundries

(Reference No. 135) We are about to circularize the manufacturers of druggists sundries in the interests of a newly-organized chain store system in Cuba and should be pleased to receive a list of such manufacturers.

* * *

Rubber Varnish

(Reference No. 132) We have a number of inquiries from our customers for an enamel or varnish that is applied to rubber to give it the bright lustre. We are interested in obtaining a product to be applied before vulcanization and one after it. We would appreciate it if you will place us in contact with manufacturers able to supply our requirements.

GOODYEAR 1924 NET PROFITS ARE DOUBLE THOSE OF PREVIOUS YEAR

Report Shows Earnings of $12,161,540, Against $6,507,245 in 1923, an Increase of $5,654,295—$20,000,000 in Securities Retired—Surplus of $11,012,440

The report of the Goodyear Tire & Rubber Co., Akron, Ohio, issued recently, is the most favorable submitted to stockholders since the reorganization of the company in 1921. The report shows net sales of $115,323,173, against $106,026,110 in 1923.

E. G. Wilmer, chairman of the company, in a statement to stockholders says: "Our dollar sales for 1924 have been exceeded in the past, but only due to the high selling prices of the war and post-war years. In point of physical volume, the number of tires sold through Goodyear tire dealers was considerably in excess of that of any previous year."

Earned $7.78 on Common Stock

After allowing for all selling and operating expenses, fixed charges and other deductions, the company reported net income of $12,161,540 for 1924, against $6,507,245 in 1923. Dividends paid on the prior preference stock last year aggregated $1,149,100, leaving a surplus of $11,012,440. This surplus, after allowing for dividend requirements on the company's 7 per cent cumulative preferred stock, left a balance equal to $7.78 a share earned on the 831,585 shares of no par value common stock outstanding. In 1923 the company earned approximately 90 cents a share on the common stock.

The consolidated income account of the parent and subsidiary companies for 1924 and 1923 follows:

	1924	1923
Net sales	$115,323,173	$106,026,110
Expenses	101,004,330	93,947,379
Oper. earn	$14,318,843	$12,078,731
Other income	3,044,318	641,397
Balance	$17,363,162	$12,720,128
Fixed charges	5,201,622	6,212,883
Net income	$12,161,540	$6,507,245
Prior pref. divs.	1,149,100	2,729,652
Surplus	$11,012,440	$3,577,593
Prev. surplus	11,786,136	8,208,543
P. & L. surplus	$22,798,516	$11,786,136

The general balance sheet as of Dec. 31, 1924, shows current assets valued by the company at $59,647,342. This total included $11,494,120 cash, $4,000,000 call loans, marketable securities valued at $3,135,000, inventories valued at cost or market whichever was lower, $31,051,513, and notes and accounts receivable of $9,966,710. The current liabilities aggregated $6,785,767 and included $5,309,525 accounts payable, $1,176,241 accrued interest and bond premiums and $300,000 accrued dividends. The ratio of current assets to current liabilities is approximately 9 to 1.

E. G. Wilmer's Comments

Commenting on the $18,629,120 of cash, call loans and marketable securities held by the company as of the close of 1924, Mr. Wilmer says that "due to the higher volume of business now being handled and the higher costs of rubber, cotton and other materials, much of the cash on hand at the first of the year will shortly be required for working inventories."

In regard to the outlook for business during the current year, Mr. Wilmer's report to stockholders says: "Selling competition is still keen. Fluctuating costs of raw materials and other uncertainties still demand a policy of strict economy and conservatism. But careful administration, coupled with Goodyear's financial position, the healthy state of its organization and the high level of public acceptance which its products now enjoy, should assure us our full share of profitable business."

Hart Re-elected by Giant

C. E. Hart has been re-elected president of the Giant Tire and Rubber Co., Findlay, Ohio. D. E. Reynolds was again chosen as vice-president and treasurer with F. C. Burke as secretary. These men have served in the offices named for the past three years.

Annual reports of business and routine business was transacted at the session today. Since removing to Findlay from Akron, the Giant Tire company has showed a steady increase in business, the peak being reached in 1924. Even more business is expected by the officers of the company during 1925.

Announcement is made that the territory is to be extended and more dealers to be added throughout the United States. Equipment to increase production will be installed during the year.

TWO RUBBER CHEMISTRY FELLOWSHIPS OFFERED

During the academic year of 1925-1926 the Goodyear Tire & Rubber Co. and the Firestone Tire & Rubber Co. each offer a fellowship in the study of rubber chemistry at the Municipal University of Akron, which offers the only course in rubber chemistry in the United States.

The fellowships will be awarded to graduates of chemical courses in recognized universities and will pay the holder $1,000. The Municipal University exempts the fellows from the payment of all fees, tuition and breakage. The fellow agrees to give the first option of his services, for at least one year, to the company awarding the fellowship.

Lufbery Appoints Agent

The Lufbery Co., Elizabeth, N. J., recently announced that it had completed arrangements with J. A. Kendall, Akron, Ohio, to act as western representative of the company in the sale of their sulphuret of antimony. Lufbery antimonies are manufactured in France and were first placed on the market in 1876 by George F. Lufbery. These products are favorably known in the United States, Canada and Europe for their cleanness, uniformity, high coloring power and all around dependability.

Lufbery antimonies were marketed in the United States and Canada by George F. Lufbery, Jr., from 1903 to 1914 and were used continuously by the largest rubber manufacturers. The plant in France was destroyed during the war but business was resumed in this country in January, 1923.

Schrader Patent Upheld

The Wein Sales Corp., Brooklyn, N. Y., has been enjoined from selling "Quality" gauges, which the United States District Court, for the Eastern District of New York, recently held to be an infringement of the famous Twitchell Patent No. 927,298. The decree, which was signed Dec. 30, last, also ordered an accounting of profits and damages to A. Schrader's Sons., Inc., manufacturers of Schrader tire valves and Twitchell gauges, which owns the patent.

Davis Returns to U. S. Rubber

John W. Davis, recent Democratic nominee for President, was elected a director and appointed general counsel of the U. S. Rubber Co. some twelve days ago. Mr. Davis held a similar position with the rubber company prior to the campaign, but resigned when nominated for office.

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Carlisle to Build Addition

The Carlisle Tire & Rubber Co., Carlisle, Pa., will soon erect an addition to its factory which will nearly double its capacity. The new building will be a one-story structure of brick, steel, concrete and glass. It will be 60 feet wide by 200 feet long. The Carlisle company manufactures tires and tubes. Recently the factory changed from two to three eight-hour shifts.

Columbia Holds Meeting

Stockholders of the Columbia Tire & Rubber Co., Mansfield, Ohio, held their annual meeting at the factory recently. W. B. Martin, president, presided. A good year was reported by S. S. Isaly, secretary and treasurer, who stated that the outlook for the coming year was even brighter.

Oak Rubber Elects

Stockholders of the Oak Rubber Co., Ravenna, Ohio, at their recent annual meeting re-elected directors as follows: John C. Goodman, John W. Shira, Paul E. Collette, W. J. Beckley, J. E. Albright, P. L. Frank, and R. D. Laughlin. John C. Goodman was elected president; John W. Shira, vice president; and Paul E. Collette, secretary. The report of business done in 1924 was encouraging.

Takes Out Tire Patent

Roger M. Temple, Akron, Ohio, was recently granted U. S. Patent No. 1,524,114 on a tire which consists of the combination of a solid tire and a pneumatic tire. The solid tire is provided with an internal channel to fit the tread of a pneumatic tire. The channel has longitudinal and transverse grooves to fit corresponding ribs on an anti-skid tread of a pneumatic tire.

To Make New Type of Hose

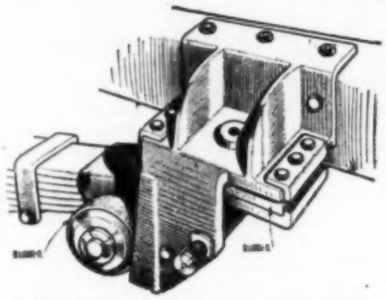
The Pioneer Rubber Mills, Pittsburg, Pa., plans to manufacture a new type of rotary drill hose which will be constructed to stand up under the wear of deep well drilling and will stand a high water pressure. Samples of the hose have already been made and the company's chemists and engineers are cooperating to make the new article a success.

Reducing Belt Registered

"Man-X" was recently registered in the U. S. Patent Office under Ser. No. 204,683 by the Thompson-Barlow Co., Inc., New York, N. Y. The company claims it has been using this trade-mark on its rubber reducing belt for men since Oct. 24, 1924.

Salmon Falls Prosperous

The Salmon Falls Manufacturing Co., Boston, Mass., manufacturers of tire fabrics, recently reported that they had experienced a good quarter for the three months ending Dec. 31. The company earned during this period more than $30,000 or better than $2.25 a share, even after figuring depreciation at $1,000 per week. The plant is running night and day on the production of tire fabrics.



An Experimental Form of Rubber Cushioning for Spring Slippers and Shackles which is being Tried on English Busses

Augustus O. Bourn

The death of Augustus O. Bourn recently, in his ninety-first year, at his home, Seven Oaks, Bristol, Conn., removes a pioneer figure from the American rubber industry.

In 1859 Mr. Bourn succeeded his father as partner in the firm of Bourn, Bourn & Chaffee, incorporating the concern in 1861 as the Providence Rubber Co. Three years later he organized a separate company called the National Rubber Co., which became the principal local industry, and which, as part of the United States Rubber Co. system, still flourishes under the name of the National India Rubber Co. In 1892, after a five years residence abroad, Mr. Bourn established a rubber manufactory at Bristol, under the name of the Bourn Rubber Co. Mr. Bourn's experiments in vulcanizing are considered an important contribution to that subject by practical rubber men and chemists.

Mr. Bourn is survived by two sons, Augustus O. and Stephen W., who were associated with him in the rubber business, two daughters, Miss Elizabeth R. and Miss Alice M., of Bristol, and a sister, Mrs. Rachel Downs of Cleveland.

Charles R. Darrah

Charles R. Darrah, aged 46, 331 Para Ave., Akron, Ohio, died recently at the City Hospital following an operation. Mr. Darrah had been employed in the experimental department of the Goodyear Tire & Rubber Co. for more than ten years. He is survived by his widow, three sons and three daughters, and his father, James W. Darrah, who is also employed by the Goodyear company. Burial was in Myersdale, Pa., his former home.

Joseph F. Beauschamp

Joseph F. Beauschamp, aged 29, an assistant foreman at the Hood Rubber Co. factory at Watertown, Mass., died recently from an attack of acute indigestion. He is survived by his widow, a daughter and his parents.

J. D Anderson Promoted

J. D. Anderson, since 1916 vice-president and factory manager of the Fisk Rubber Co., Chicopee Falls, Mass., is now in charge of production at all six divisional plants of the company, according to a recent announcement made by H. T. Dunn, president. In his new position Mr. Anderson will have charge of production in four textile mills located at New Bedford, Mass.; Jewett City, Conn.; Pawtucket, R. I.; and Westerly, R. I.; as well as in the rubber factories at Chicopee Falls, Mass, and Cudahy, Wis.

Dr. Spence Quits Norwalk

Dr. D. Spence, general manager of the Norwalk Tire and Rubber Co., Norwalk, Conn. has resigned from his position with this concern. Dr. Spence has been in charge of the manufacturing for this Company since its inception and is well known in the industry for his work on the chemistry of rubber. It is understood that his duties have been taken over by W. B. Miller, president of the company.

Registers Tire Mark

Chanslor & Lyon Co., San Francisco, Cal., recently registered in the U. S. Patent Office under Ser. No. 196,904 a trade-mark consisting of a picture of an automobile, the letters C & L and the words "Serve You Well" contained within a tire. The company claims use of this trade-mark since Jan. 1, 1923 on its tires and tubes.

Pioneer Elects Directors

The stockholders of the Pioneer Rubber Co., Willard, Ohio, at their sixth annual meeting unanimously re-elected T. W. Beelman, J. C. Gibson, R. K. Williams, J. A. Underwood and W. R. Richards directors. The report for 1924 showed a net profit of $30,098, as against a loss of $71,000 in 1923.

Brokerage Firm Formed

The Ceylon Rubber Trading Co., Inc., New York, N. Y., was recently chartered at Albany. Authorized capital is 400 shares of no par value. The firm will engage in rubber brokerage. Incorporators are A. Kluger, 518 E. 159th St.; O. A. True and H. M. Hart, 27 Cedar St., New York. A. G. Thomas, 27 Cedar St., is attorney for the new firm.

Uses Cross-word Puzzles

The B. F. Goodrich Co., Akron, Ohio, is using the cross-word puzzle fad for advertising purposes. It has recently issued a 20-page booklet containing eight difficult puzzles in which the words to be found are associated with Goodrich products. Descriptions of these products appear on the facing pages. An answer book will be issued some time later.

Presenting

A New Tire Vulcanizer Unit

Already In Factory Use—Simple in Operation
Saves In Four Major Ways

This new development—the "watch case type" Vulcanizer Unit—is the culmination of several years of experimental and test work.

Each Unit has two compartments. The illustration above shows one side open to receive tire. No other mold equipment is needed.

Four big savings are effected: 1. Lower Initial Cost. 2. Economy of Operation. 3. Reduced Labor Cost. 4. Reduced Maintenance Costs.

Complete operation time, each compartment—3 minutes. Fifty per cent less steam consumption. No cooling water. All hydraulic equipment, conveyors, extra heavy piping, and operating valves eliminated. Individual air supply to each compartment, easily accessible.

This new Unit is already in factory service. Detailed descriptive folder now ready for interested manufacturers.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

BRITISH PRODUCERS FEAR CRUDE RUBBER SHORTAGE

(Special to THE RUBBER AGE*)*

Trade developments the world over must eventually mean an increase in the consumption of rubber. It appears almost certain that something in the nature of a shortage will develop during the present year. As a result of the average price of the commodity having exceeded 1s. 6d. during the quarter ended Jan. 31 an additional 10 per cent of standard production will, in accordance with the terms of the restriction scheme, be exported at a minium rate of duty from Malaya and Ceylon during the quarter commencing Feb. 1. This, however, will do little more than bring supplies up to normal. Consequently the price is almost certain to be maintained at its present level despite this increase in supplies. Moreover, the only large outstanding stocks—those in London—have recently suffered a fresh reduction to under 29,000 tons.

Do Not Desire a Boom

At the same time it should be realized that most of the important British groups controlling producing enterprises have no intention of letting the price run away from itself. The very last thing they desire is a boom. Their object is to establish the industry on a steady profit-earning basis fair to both producer and consumer. That basis is a price of something around 1s. 9d. per lb. It may, therefore, be taken for granted that should a scramble for spot rubber ensue —a not unlikely event—it will be met by free selling of rubber forward.

It should never be forgotten that there is a very large potential production in the restricted areas. Under the restriction scheme this potential production is very strictly controlled. Were it allowed free access to the market the present strength of the position would be undermined and the chaotic conditions ruling in pre-restriction times be restored.

Another factor in the improvement has been the publication of Colonial Secretary Amery's reply to an application by the Planters' Association of Malaya for a revision of the scale of release under the Stevenson scheme. The reply indicates that no change is thought desirable at present, but also shows that the Colonial Office is very optimistic as to the future.

Returns for December

The complete returns just announced for December give the month's shipments as 24,204 tons, and of this total 12,407 tons were Malayan grown, with a balance of as much as 11,797 tons figuring under foreign imports. According to a leading Mincing Lane authority, the latter amount comprised 8,085 tons wet native rubber imported into Singapore and 8,712 tons estate rubber, the fact that the estate rubber imports were about 2,000 tons in excess of the normal monthly quantity being accounted for by the attractive level of values during the month in Singapore, which has been the highest of the Eastern centers. As a result, rubber which ordinarily would have been sold in the Dutch East Indies markets found its way to Singapore for sale.

The total exports from British Malaya last year were 259,734 tons, against 252,146 tons in 1923, the increase being due solely to the expansion in foreign imports, which has more than counter-balanced the decrease produced by restriction in the exports of Malayan grown rubber.

Rubber Loop Absorbs Shocks

A rubber shock absorber to check the rebound of automobile springs is manufactured by the Huntington Rubber Mills, Portland, Ore. The product has been on the market for about 18 months on the Pacific Coast and several thousand sets are in use. The device, which is called the Lewis Rubber Shock Eraser is undoubtedly the least-expensive spring-checking product on the market. The rubber straps are specially compounded and treated and will stand a pulling strain of 4,000 pounds per square inch. The ingredients used in the mix give the shock eraser great wearing qualities.

Lewis Rubber Shock Eraser

No special tools are required to install the shock absorber on any car — it is made for practically every car in use. Complete instructions for installing come with every set and the snubbers can be put on any car in less than an hour.

The use of balloon tires have made some form of spring-checking absolutely necessary to comfort. The gradual easing off of the rebound with the Lewis Shock Eraser makes it particularly adaptable to cars equipped with low pressure tires.

Ajax Offers Stock

The Ajax Rubber Co., New York, recently announced that holders of capital stock of record Feb. 9 will be offered the right to subscribe at $10 a share for the new capital stock of no par value to the extent of three shares for each seventeen shares now held. The committee ruled that the stock should be ex rights on Feb. 9, that the transaction must be settled on Feb. 19 and that the right to subscribe will expire on March 2.

I. B. KLEINERT CONDUCTS RUBBER REDUCER CLASS

In order to familiarize buyers and others interested in the rubber reducing corset with the scientific ideas behind this product, the I. B. Kleinert Rubber Co., New York, conducted a school of scientific reduction during the week of February 9 to 13.

The course was in charge of Dr. Harriet Van Buren Peckham and embraced an explanation of the manufacture of this article from the gathering of the rubber through the various processes of treatment to the finished product.

Living models were used to illustrate the utility of reducing corsets, the entire aim of the school being to give an intelligent idea of the theory that underlies this type of garment.

Mansfield Dines Salesmen

District managers and salesmen of the Mansfield Tire & Rubber Co., Mansfield, Ohio, were recently tendered a banquet by the company. Short talks were given by G. W. Stephens, president; K. J. Thompson, superintendent; and P. H. Ober, manager. The district managers expect the coming season to be the most successful one in the history of the company.

General Holds Dance

More than 3,000 attended the recent dance of employees of the General Tire & Rubber Co., Akron, Ohio, in the recently completed addition to the factory. The installation of machinery was deferred until after the dance. The affair took the place of the annual picnic which was not held last summer because of the rush of orders. Professional acts were staged between dances. W. J. Cahill was general chairman of the dance.

W. H. Miner Tendered Dinner

W. H. Miner, president of the Miner Rubber Co., Quebec, Canada, was recently tendered a dinner by the sales and warehouse staff of J. Leckie Co., Ltd., at the Hotel Vancouver, Vancouver. Mr. Miner is on a business trip and is accompanied by John Blanshard, superintendent of production, and Fred Minzer, sales manager, of the company.

Tire Machine Patented

Frank H. Grove, Columbiana, Ohio, was recently granted U. S. Patent No. 1,524,861 on a tire-building machine. The machine has in combination with a rotatable tire building core, a bead setting and trimming device including a rotatable block mounted adjacent to the core and rotatable upon an axis at right angles to the axis of the core. A pair of arms are hinged to the block. One arm holds a bead setting attachment and the other a trimming device. Means are not only provided for normally holding the arms in raised position but for swinging either arm into operative position above the core.

W. T. HENLEY OPENS A RESEARCH LABORATORY

(Special to THE RUBBER AGE*)*

W. T. Henley's Telegraph Works Co. has just opened research laboratories at its Works at Gravesend, Eng. The laboratory will function in testing the quality of the raw materials used, such as rubber, oil, lead, copper, paper, etc., and also investigating new materials. Factory processes under exactly controlled conditions on a scale sufficiently large to permit a judgement to be formed of their applicability to full-scale manufacture will be tried out. There is also a department whose business it is to compile technical information from published data and from the results obtained in the laboratories, and to answer the numerous inquiries on technical points received from customers all over the world.

The laboratories are housed in a building of steel and brick construction, having a total floor area of 14,000 sq. ft. The first floor contains a chemical laboratory, library, and administrative offices, while on the ground floor are a workshop, room for physical tests, furnace room, room for microscopic and microphotographic investigations, and high and low tension laboratories. Steam at 60 lb. pressure, and compressed air at 15 lb., is supplied and vacuum and pressure pumps are installed with special connections. Electrical power is available in the form of 440 volts three-phase and 110, 250 and 500 volts d.c., and by means of a 110-volt storage battery of 800 amphere hours' capacity any voltage between 2 and 110 may be connected to any room.

The largest of the laboratories — that devoted to high tension work — is equipped with modern plant for the measurement of dielectric losses and for the application of high-voltage tests to finished lengths of cable. A 225 kv. a. three-phase 500-volt motor alternator operating through three regulating transformers supplies the primaries of three 500/125,000-volt single-phase testing transformers, and as the latter are each insulated for 250,000 volts to earth a three-phase test up to 210,000 volts or single-phase up to 375,000 volts can be effected by suitable grouping. Two heat-lagged water tanks 8 feet deep enable tests to be made on drum lengths of cable at temperatures up to 90 deg. C. The low-tension laboratory is equipped with special apparatus evolved for testing impregnating compounds for dielectric resistance, breakdown, and viscosity.

A Schopper machine for testing the tensile strength of rubber, cotton, twine, and fine wire has been installed.

Latex Products Organized

The Latex Products Corp., 4554 Broadway, Chicago, Ill., was recently incorporated with an authorized capital of $50,000. The company will manufacture latex products. Incorporators are Fred E. McEwen, Charles R. Miller and Robert J. Murphy.

B. O. ELTING RE-ELECTED BY AKRON RECLAIMING

B. O. Elting was elected president and treasurer of the Akron Rubber Reclaiming Co., Barberton, Ohio, at the first annual meeting held recently. C. E. Bishop was named first vice president and factory manager, and William Welch, second vice president and sales manager; W. A. Hart, formerly with the Goodyear Tire & Rubber Co., was elected secretary.

Directors elected by the stockholders are J. M. Alderfer, president of the India Tire & Rubber Co.; C. W. Seiberling, vice president of the Seiberling Rubber Co.; R. M. Pillmore; J. A. Christy, superintendent for the Star Rubber Co.; William O'Neil, president of the General Tire & Rubber Co.; B. O. Elting; C. O. North of the Rubber Service Laboratory; C. E. Bishop; and William Welch.

The plant will be opened about April 15.

Mold Device Patented

A device invented by Daniel E. Hennessy, Milwaukee, Wis., to facilitate stripping articles from vulcanizing molds and recently granted U. S. Patent No. 1,522,780, has been assigned to the Fisk Rubber Co., Chicopee Falls, Mass. The device includes a recess communicating with the interior of the mold, a rotatable plug provided with a duct, placed in this recess and adapted upon rotation to open and close a passage from the interior to the exterior of the mold.

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Goodyear Assigned Patents

The Goodyear Tire & Rubber Co., Akron, Ohio, has been assigned four recent patents. Two of which cover the process of making rubberized fiber composition are the invention of Robley H. Morrison and are patented in the U. S. Patent Office under Nos. 1,526,297 and 298. They cover a method of treating fibers which includes agitating the fibers in a non-solvent of rubber, removing a portion of the solution, mixing the fibers in a solvent of rubber, adding a solution of rubber which precipitates the rubber on the fibers, removing the fibers and vulcanizing.

U. S. Patent No. 1,526,299, issued to William G. O'Brien and assigned by him to the Goodyear company, covers the method of manufacturing rubber fiber composition by milling together a quantity of fibers and rubber, dissolving the rubber and precipitating it on the fibers. U. S. Patent No. 1,526,300, issued to Lorin B. Sebrell and also assigned to Goodyear, covers the method of vulcanizing cnoutchouc and products obtained thereby.

Guinzburg Invents Reducer

Roland H. Guinzburg is the inventor of an abdominal reducing garment recently granted U. S. Patent No. 1,526,141. He has assigned the patent to the I. B. Kleinert Rubber Co., New York. The garment comprises two sections joined to extend around the body. The sections are composed of an elastic material impervious to moisture. An elongated strip free of the front section has its ends connected to the face of the front section at spaced points.

McKee Quits International

A. L. McKee, assistant to the president of the International Rubber Co. of America, Anderson, Ind., has tendered his resignation, effective March 1. During the past two years Mr. McKee has had charge of the sales, purchasing and adjustment departments of the company. He has not announced new plans.

Mason Reports Profits

W. A. Cluff, president of the Mason Tire & Rubber Co., Kent, Ohio, stated recently at a meeting of the company that a $9,211,000 business was done in 1924. He announced the opening of a department of branch operations which will be managed by George H. Smoots. Balloon tire production is to begin soon at the Bedford plant it was stated.

Bay Shore Incorporated

The Bay Shore Rubber Tire Works, Queens, N. Y., was recently incorporated by S. A. Bode, S. Geiler and R. Geiler. Authorized capital is $20,000.

Mishawaka Rubber Elects

At the recent annual meeting of the Mishawaka Rubber & Woolen Mfg. Co., South Bend, Ind., E. A. Saunders, F. G. Eberhart and E. J. W. Fink were elected directors. The following officers were re-elected: E. A. Saunders, president; F. G. Eberhart, vice president and secretary; and E. J. W. Fink, general manager.

Chelsea Tire Formed

The Chelsea Tire Corp., New York, was recently incorporated with an authorized capital of $50,000 to manufacture tires. Incorporators are R. E. Doyle, 123 W. 64th St.; R. C. Brown and E. L. Williams, 43 Exchange Place, New York City.

Tube Mandrel Patented

Clyde E. Lowe, Cleveland, Ohio, was recently granted U. S. Patent No. 1,524,186 on a seamless wrought-iron mandrel for tire tubes having a curvilnear form subtending the greater part of a circle but less than 360°, each portion of said mandrel being ovate in cross-section with its smaller end inward.

McDowell Heads Mold Firm

Dent. R. McDowell, formerly connected with the B. F. Goodrich Co., has taken up his duties as president of the India Machine & Rubber Mold Co., Annadale Ave., Akron, Ohio. Mr. McDowell was connected with the Goodrich company for 18 years.

Lee to Get New Equipment

It was reported recently that the factories of the Lee Tire & Rubber Co. at Conshohocken, Pa., and at Youngstown, Ohio, will be equipped with new machinery in the near future. The company will devote at least $150,000 to this purpose.

Hale Registers Trade-Mark

The Alfred Hale Rubber Co., Quincy, Mass., recently registered in the U. S. Patent office under Ser. No. 202,012, the trade-mark "Halesole" which has been used since last June on rubber, fibrous and composition soles.

Federal at Capacity

About 10,000 tires and 12,000 tubes are now being shipped from the Federal Rubber Co., Cudahy, Wis., daily. This is an average of eight carloads a day or an increase of 25 per cent over the average for 1924 when six carloads were shipped. Although the working staff is smaller, production has been increased to keep pace with shipments by the installation of new equipment. One of the features of the factory is a large conveyor.

Tire Name Registered

The trade-mark "Dunhill" was recently registered in the U. S. Patent Office under Ser. No. 206,066 by the Fidelity Tire & Rubber Co., Massilon, Ohio. The company claims it has been using the trade-mark on its tires since last July.

Rubber Boot Patented

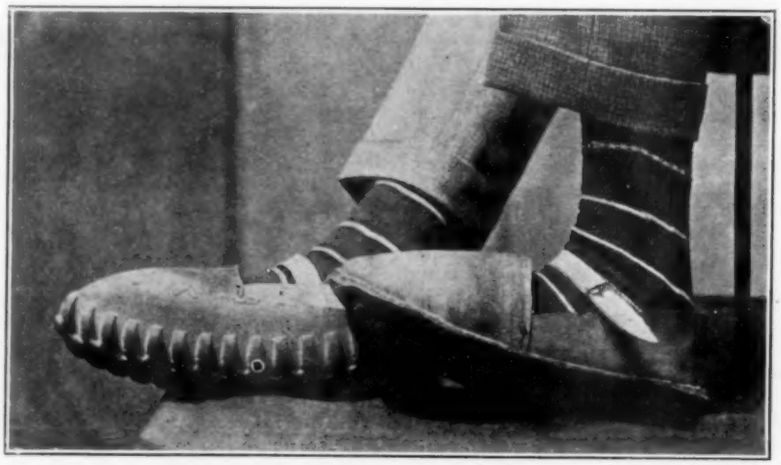
Frederick H. Martin, who has assigned the patent to the B. F. Goodrich Co., Akron, is the inventor of a rubber boot which was recently granted U. S. Patent No. 1,524,049. The boot has a leg portion adapted to be folded upon itself which comprises a reinforcement of weftless, rubberized thread fabric.

Zimmerman Rubber Formed

The Zimmerman Rubber Co., Wilmington, Del., was recently incorporated to manufacture rubber- products. Authorized capital is $150,000. Incorporators are C. Ray Zimmerman, Ernest Ewell, and E. C. Paterson, all of Rochester, N. Y.

Declares Extra Dividend

Directors of the Miller Rubber Co., Akron, Ohio, have declared a quarterly dividend of $4 on the 8 per cent preferred stock, payable March 1 to stockholders of record Feb. 10. The dividend includes the regular quarterly payment of 2 per cent, and an extra dividend of 2 per cent, clearing up an accumulation.



Kadel & Herbert

In Spain many of the peasants wear shoes made from old tires

H. ERIC MILLER SEES ENCOURAGING OUTLOOK FOR PLANTATION INDUSTRY

World Consumption of Rubber Growing Steadily—Advent of Balloon Tire Viewed as Outlet for Additional Rubber Because it Does Not Wear as Long as Other Tires

(Special to THE RUBBER AGE)

In the course of his address at the recent annual meeting of the Langen (Java) Rubber Estates Co., Ltd., of which he is chairman, H. Eric Miller, former chairman of the Rubber Growers' Association of London, made interesting reference to the outlook for the plantation rubber industry.

Describing the prospects for 1925 as "distinctly encouraging," Mr. Miller went on to say that the Stevenson scheme had resulted in the elimination of the surplus stock of rubber which was encumbering the market, and that the world's requirements of crude rubber were growing apace.

Demand Will Increase Steadily

"It is clear," he continued, "that further substantial export releases will be required during 1925, and there is every reason to believe that, barring any untoward happening, each succeeding year will show a progressive increase in the demand. The experience of the last two years has taught us, however, that the judgment of the majority of those whose business it is to gauge the trend of the market is unreliable, and it would be to the advantage of all concerned if a greater feeling of confidence could be established. The Stevenson scheme in itself is much better balanced than the judgment of those who operate under it as buyers and sellers of rubber. Dame Rumor still has far too much play, and her influence is often of more immediate effect than hard facts. The Stevenson scheme has to take the blame for very glaring errors in human judgment, but the swing of the pendulum will gradually become less violent, and the legitimate development of the rubber goods manufacturing industry will be encouraged yet further thereby.

"The effect of the wider adoption of the low-pressure tire on the annual consumption of rubber is insufficiently appreciated. It is not felt immediately a set of balloon tires is fitted in place of high-pressure tires, but only has its marked effect when the tires are at the end of their life. It is impossible yet to express conclusively in tire mileage the difference in the life of a pound of rubber in a low-pressure tire as compared with the life of a pound of rubber in a high-pressure tire, but I will venture the opinion that the tire mileage of a low-pressure tire will be about two-thirds that of a corresponding high-pressure tire, as a set-off against which, however, the motorist derives much enhanced comfort and a saving of wear and tear in the running of his car.

"Most balloon tires at present in use are original equipment on new cars, and as we are still unable to build a road which will give real motoring comfort for light cars except by the fitting of low-pressure tires, there will be a gradual but very definite change over from high-pressure to low-pressure tires."

Balloon Tires a Factor

Mr. Miller referred to the ad of a Continental tire concern as a striking confirmation of the views he had expressed. The ad says that in 1924 250,000 cars were running on the concern's balloon tires, and bears the slogan: "Without low-pressure tires any car is out of date."

"The desire to be up to date is a potent factor in the United States," continued Mr. Miller, "and I believe that the swing-over to balloons will be very rapid. The industry's calculations were very materially upset in the opposite direction a few years ago, when the cord tire was so largely substituted for the fabric tire, the former having double the mileage capacity of the latter. We are now to see some compensation, as the advent of the balloon tire must add substantially to the weight of the rubber consumed by the motoring public. This will be definitely felt in 1926, as it will come approximately in the second year of the change over from high-pressure tires. It is highly probable that ultimately more than half the world's motor vehicles will be running on balloons. This will automatically increase the consumption of rubber for this purpose by one-sixth, which, on a total of about 400,000 tons, represents a very material advantage to producers.

Speculation Should be Avoided

I hope no one will misconstrue my remarks as justifying increased speculation in rubber. I desire to see greater steadiness in the market, and I hope that the manufacturers, who are the final buyers of crude rubber, will realize that the continuance of the hand-to-mouth policy now that stocks have been reduced to a low level carries with it the risk of the market being upset by speculators, whereas if they take prudent thought for the morrow in their buying operations, and remember how the Stevenson scheme works, supplies will be much better regulated. From the producers' viewpoint the future appears to hold an adequate measure of prosperity."

Servus Gets Permit

The Servus Rubber Co., Rock Island, Ill., was recently granted a permit for the two-story addition to the second unit of its factory at Second St. and Eleventh Ave. The dimensions of the completed unit will be 168 x 80 feet and the additional space will make it possible for the company to increase its output of rubber footwear to 8,500 pairs a day. Twenty-five additional hands will be hired when the addition is completed. The unit is costing more than $100,000.

Rubber Employees Dine

The office force of the Firestone-Apsley Rubber Co., Hudson, Mass., enjoyed a turkey dinner recently in the Pine Grove Inn, Northboro, Mass., after a sleigh ride to the village.

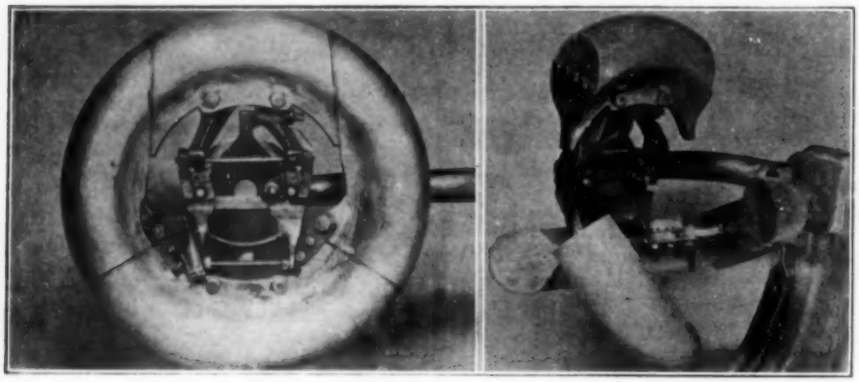
J. H. LANE & CO.
Tire Fabrics Cord Fabrics
Enameling Duck Drill Sheeting
Osnaburg and Special Constructions
250 W. 57 STREET, NEW YORK 226 WEST ADAMS ST., CHICAGO

FACTORY EQUIPMENT

DE MATTIA INTRODUCES NEW TYPE OF TIRE CORE

The wide demand for balloon tires and the consequent requirements in core and mold equipment offers an opportunity for new developments in labor saving devices.

De Mattia Bros., Inc., Garfield, N. Y. have constantly been striving, with success, to meet the requirements of the trade, and the feature here described is a most interesting development in the detail of their unique core.



The De Mattia Core Chuck

At the left is shown the De Mattia Core Chuck assembled and at the right the chuck is shown semi-collapsed

The first illustration shows the Unique type of core as assembled on the chuck ready for building the tire. When collapsing the core to remove the tire, the swivel hinge, here featured, permits the operator to pull one section out of the tire at any angle which may be most convenient for stripping that particular size of tire. This results in giving a greater amount of clearance for removing the sections, and consequently imparting more freedom and ease in operation as well as reducing the time.

The second illustration shows the core in a semi-collapsed position with the section, operating on the swivel, in an extreme position and completely hiding the swivel hinge.

The hinge is of compact construction and is made entirely of steel. In line with this company's policy of making interchangeable equipment, the hinge has been designed so that it can be applied to any Unique Core made heretofore. It is only necessary to remove the side plates of one of the rigid hinges and the swivel hinge can be substituted by the ordinary mechanic.

This type of hinge is fully covered by United States Patents.

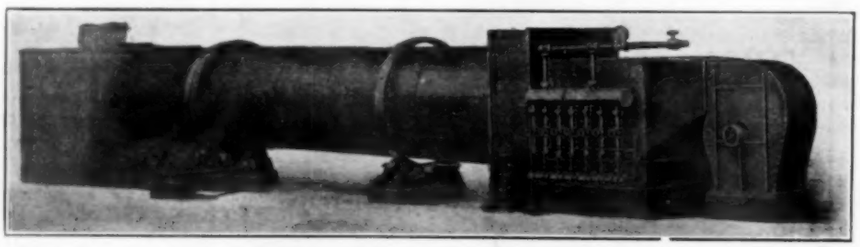
AMERICAN PROCESS CO. STEAM HEATED DRYER

The steam heated air dryer manufactured by the American Process Co., 68 William St., New York, is of the rotary type in which the heated air comes in direct contact with the material to be dried. It consists essentially of a slightly inclined revolving cylinder, fitted with longitudinal radial lifters, in which the damp or wet rubber is thoroughly agitated with the hot air passing through the same, a series of external steam pipe coils for heating the air and a suitable fan for blowing the air through or for drawing the air over the coils and forcing it into the drying cylinder.

The counter-current dryer shown in the illustration is particularly adapted for use in reclaiming plants for handling shoddy coming from the washer. It is said that the machines furnish the most economical method for dewatering shoddy as the process is continuous, requiring no labor and takes small floor space, power and steam.

The damp material enters the revolving cylinder at the higher end through a suitable feed chute, falls to the bottom of the drum, is picked up by the longitudinal lifters, elevated to nearly the highest point of the rotation and then showered through the stream of heated air. The cycle of operation is repeated until the product is discharged from the lower end in a thoroughly dried condition.

The cylinder itself is encircled by two rolled steel tires which are supported on a substantial carrying and driving mechanism. The dryer is rotated either by the frictional resistance between the tires and the driven supporting rollers or more generally by means of an annular gear surrounding the dryer and meshing with a pinion to which the driving power is applied through suitable reduction gearing.



American Process Steam Heated Air Rotary Dryer

"Skipper" Registered

The Archer Strauss Rubber Co., Framingham, Mass., recently registered in the U. S. Patent Office under Ser. No. 204,433 the trade-mark "Skipper" which it has been using since last July on rubberized textile fabrics consisting of a woven fabric on side of which is coated with rubber.

Moore-Merritt Opens

The factory of the Moore-Merritt Rubber Co., Chattanooga, Tenn., was placed in operation recently. For the time being the company will manufacture composition rubber soles exclusively. The factory was purchased from the DuBois Rubber and Tube Co. The plant has an initial force of 35 men.

Kleinert Gives Up Plant

As a result of the fire which destroyed their branch factory at Little Neck, L. I., the I. B. Kleinert Rubber Co. has decided to centralize its manufacturing in College Point, L. I. The company rented the building that was destroyed. The machinery and equipment were insured by the Factory Mutual Insurance Co., Providence, R. I.

HOWE FACTORY SOLD FOR $197,500 TO RECLAIMERS

Vice Chancellor John H. Backes recently approved the sale of the factory and equipment of the Howe Rubber Corp., New Brunswick, N. J., for $197,500. The purchasers were Joseph D. Marcus and Irving Laurie who operate a reclaiming plant at Millstone, N. J., known as the Somerset Rubber Reclaiming Works. The Howe plant will be used to manufacture reclaimed rubber.

The affairs of the Howe company have been in the hands of a receiver, Charles D. Ross, for several months. In January the offer was submitted to Mr. Backes and the creditors and the stockholders were asked to show cause why the offer should not be accepted. The offer was accompanied by a certified check for $10,000 and it was provided that the balance should be paid in cash in two weeks.

The Action of Some Antioxidants on the Aging of Vulcanized Rubber

By Camillo Pelizzola

Laboratory of Chemical and Physico-Chemical Research of the Italian Pirelli Co., Milan

DURING researches devoted to a study of natural and artificial tackiness in raw rubber, it was found that some substances such as tannic acid and pyrogallol had the power of retarding to a remarkable degree the catalytic oxidizing action of certain metallic oxides like manganese dioxide. Pyrogallol was found to be particularly efficacious in retarding oxidation, and this suggested the idea that it might have a beneficial influence in the aging of vulcanized rubber.

Tests to determine this action were in progress when Moureu and Dufraisse published their series of articles in which they showed that numerous phenols—which they designated "antioxygens"—prevented in small amounts the resinification of many auto-oxidizable substances, such as acrolein, benzaldehyde, furfural, etc.

Influence of Polyphenols

Hellbronner and Bernstein[2] have now published an article in which they describe the influence of two of these polyphenols—hydroquinone and tannic acid—on the phenomena of oxidation(tackiness and deterioration) in the case both of raw and vulcanized rubber. These authors assert that the addition of these substances in very small quantities (0.5% to 5%) to a mixture containing sulphur allows a normal cure in hot air of 130°C for 2 hours.

Carrying out the vulcanization in a press and using pyrogallol, the behavior has been found to be different. A mixture composed of 100 parts of rubber, 8 parts of sulphur and 1 part of pyrogallol was vulcanized in a press with a corresponding mixture containing no pyrogallol, and the two were tested by the ring method on a Schopper dynamometer. The pyrogallol was found to have a *marked retarding influence on the cure*, and to obtain two vulcanizates which were physically comparable it was necessary to vulcanize the mixture containing the pyrogallol 4 hours and the control mixture only 2 hours at 144° C. It was interesting then to ascertain whether the antioxidizing influence of the pyrogallol, which had been shown to be so beneficial in the case of raw rubber, was still active after vulcanization. It was regarded as most probable that it would suffer decomposition during vulcanization and would react with sulphur.

Deterioraton with Pyrogallol

The remaining rings for the Schopper test were placed in a thermostat with continuous renewal of air at 77°C and submitted to the usual artificial aging test. The vulcanized product containing the pyrogallol was somewhat more resistant than that in which there was none, and the time required to reduce the tensile strength to 5 kg. per sq. mm. was 270 hours instead of 184 hours.

Encouraged by this initial test, it became desirable to determine the effect of a much lower concentration in the hope of lessening the retarding effect on the vulcanization without diminishing appreciably the resistance to deterioration. A concentration of pyrogallol of 1 part per 1000 parts of rubber gave a retardation of 12 minutes in the cure, but no appreciable influence on the aging. A concentration of 5 parts per 1000 parts gave a retardation of 93 minutes, while the time required to reach a definite degree of deterioration under the conditions described above increased from 110 to 150 hours.

Pyrogallol was then tested in less simple mixtures. In particular a mixture similar to that above only containing 3% of zinc oxide was tested. Addition of 1% of pyrogallol, based on the rubber, to this increased the time of cure from 45 to 133 minutes, while the control mixture and that containing the pyrogallol reached the same state of deterioration in 240 hours and in 170 hours respectively.

In this case *the mixture containing pyrogallol deteriorated the more rapidly* and this was moreover not the only unexpected result obtained in the investigation of antioxidants. On testing a mixture more heavily loaded with zinc oxide, *i.e.*, a mixture containing rubber 100, sulphur 4 and zinc oxide 100, with and without the addition of 1% of pyrogallol, it was found that pyrogallol had an *accelerating action on the vulcanization.* This was so marked that the same cure was obtained in the mixture with pyrogallol in 1 hour at 144°C and in the mixture containing no pyrogallol in 2 hours.

This is the first example reported of *an organic substance which is transformed by zinc oxide from an agent which retards vulcanization to an accelerator.* This fact cannot be explained by any theories yet advanced of the mechanism of the action of accelerators. The stress-strain curves of these two mixtures cannot be superimposed since they differ in form. During aging however they approach one another throughout their length, and after six days they are virtually coincident.

Antioxidant Retards Cure

Finally pyrogallol was tested in a mixture containing organic accelerators in the presence of a small quantity of zinc oxide. In this case also, the addition of only 0.5% of antioxidant retarded the cure considerably, and *the mixtures containing pyrogallol deteriorated more rapidly than those without this antioxidant.*

The tests described above prove that the use of one of the "antioxygens" of Moureu and Dufraisse for its influence on the aging of rubber is of benefit only in the case of mixtures containing sulphur alone. A detailed study of the effects of these substances on rubber can certainly be of value, but at the present time the most important substances for retarding deterioration are still organic accelerators. The latter, as shown by Marzetti[3], act thus in virtue of their ability to retard the absorption of atmospheric oxygen.

Resume

Experiments are described on the action of pyrogallol as an antioxidant.

The addition of such a substance in a mixture containing only sulphur increases the resistance of the rubber to deterioration but produces a marked retardation of the rate of vulcanization.

In a mixture containing zinc oxide also, the addition of pyrogallol increases the rate of deterioration, while the rate of vulcanization is decreased if the zinc oxide content is low and is increased if it is high.

In the presence of organic accelerators the addition of pyrogallol retards the rate of vulcanization and increases the rate of deterioration.

Rubber by the Kerbosch Process

Kerbosch rubber retains from 215 to 4.5 per cent of moisture and in spite of the presence of the whole of the serum does not give an appreciable loss in weight when washed and creped. It is less plastic than ordinary plantation rubber and even at a temperature of 100 degrees C it is still remarkably stiff. The rate of vulcanization and the slope are higher than for plantation rubber while the viscosity is lower. *Arc. voor Rubberculture*, 1924, No. 4.

*Translated by C. C. Davis from the *Giornale di Chimica Industriale*
[1] Translated by C. C. Davis from the *Giornale di Chimica Industriale*
[2] Comptes Rendus 177, 204-6 (1923).
[3] *Giornale di Chimica Industriale ed Applicata* Vol. 4, October 1922.

The Status of the Japanese Rubber Industry

Centers of Industry are Tokyo and Yokohama—Rubber Footwear and Motor, Rickshaw and Bicycle Tires are Principal Products

THE first Japanese rubber factory is said to have been founded at Tokyo in 1880. The Japanese industry has developed in two principal centers, one in Tokyo and Yokohama, and the other in Kobe and Osaka. The latter was of considerably greater importance than the former even before the earthquake and fire destroyed factories in Yokohama. The Kobe and Osaka district is now supreme in the Japanese industry.

All Kinds of Products Made

The industry produces practically every type of rubber products. Tires for rickshaws, bicycles, and motor vehicles constitute a leading product, and in these lines a large export business is done with the Dutch East Indies, China, Kwangtung, the Straits Settlements and Chosen. In 1921 and 1922 the local Japanese tire trade was almost exclusively supplied by domestic products, but American motor tires have made considerable progress in Japan during the past two years, the number of automobile casings exported to Japan from the United States having increased from 7,297 in 1922 to 52,903 in 1923 and 67,896 in eleven months of 1924.

The number of rubber factories in Japan is not definitely known. Rubber products have been produced on a small scale by numerous small establishments, and there has been no recent official census of the industry. Semi-official reports place the number of establishments producing rubber goods as high as 400, but a careful investigation by Acting Commercial Attache H. A. Butts, Tokyo, shows but 50 companies with a paid up capital of over Yen 100,000 each, and only about 75 other companies listed in directories. The Commercial Attache has secured from the Department of Argriculture and Commerce, Bureau of Industry, the following figures covering the production of the Japanese rubber industry in 1921 and 1922, tires and footwear being the two principal items reported:

Production of all Rubber Manufactures.

(Values in Yen)

		1921		1922
Ebonite	Yen	827,402	Yen	1,235,829
Shoes		12,642,320		9,932,282
Tires		14,240,804		6,761,455
Other Products		20,044,986		26,194,126
Totals	Yen	47,755,512	Yen	44,123,672

The Department is unable to supply statistics in greater detail because of the destruction of records in the earthquake and fire. Destroyed records are in course of recompilation, and Commercial Attache Butts reports that a special survey of the rubber industry is under way and that the Bureau of Industry expects to issue a comprehensive report on the rubber industry in 1925 which will be forwarded as soon as it is released. This official investigation will doubtless give more definite advice than has been heretofore available regarding the status of the industry and the number of manufacturing firms.

Official Japanese trade statistics show imports of crude rubber and gutta percha as follows:

	Metric Tons	Yen		Metric Tons	Yen
1918	7,362	12,948,000	1921	23,350	15,724,019
1919	10,860	17,364,000	1922	16,714	11,315,348
1920	6,111	13,422,000	1923	17,457	19,325,513

First 10 months of 1924.—Yen 17,576,000.

The volume and value of "gum" tires exported, including automobile tires, rickshaw tires, and bicycle tires as officially reported are shown below. A downward trend in the exports will be noted for 1923 and 1924.

	Kilos	Yen		Kilos	Yen
1914	397,256	1,086,000	1919	2,163,720	7,114,000
1915	1,130,836	3,412,000	1920	2,314,020	8,018,000
1916	1,255,334	4,076,000	1921	1,322,940	4,478,426
1917	1,305,735	4,083,000	1922	1,916,700	5,999,150
1918	1,467,596	4,506,000	1923	1,749,120	3,899,949

First ten months of 1924 2,561,000

The destinations of tire exports during the recent years are shown below:

Japanese Tire Exports

	1923		1922		1921
	Picul	Yen	Picul	Yen	Picul	Yen
China	7,751	1,068,671	12,294	2,311,586	7,829	1,544,406
Kwantung	2,543	293,105	2,340	381,628	1,564	277,682
Straits Settlements	4,784	689,600	3,983	797,317	1,993	433,877
Dutch East Indies	12,664	1,666,847	12,467	2,241,904	9,673	2,020,981
Other	1,410	181,726	861	166,715	990	201,480
	29,152	3,899,949	31,945	5,999,150	22,049	4,478,426

It will be noted that the production statistics for the Japanese industry show rubber shoes to be a more valuable product of the industry than tires in 1922. Special types of all rubber footwear, such as the "tabi," or coolie sandal, and the imitation oxford shoe of all-rubber construction, are produced on a large scale in Japan. Exports of rubber shoes are not separately reported in official statistics for recent years. Exports of footwear are shown in three classes: 1. Boots, Shoes, Clogs, Sandals, etc. of leather; 2. Slippers; and 3. Other. Rubber shoes are believed to constitute the majority of the exports under the third class, and the value of exports in recent years is as follows: 1918, 3,786,000 Yen; 1919, 3,952,000; 1920, 2,906,000; 1921, 1,675,043; *1922, 2,908,667; and 1923, 1,737,472 Yen.

*In 1922, the volume of rubber boots and shoes exported under this heading was officially reported as 282,387 dozen pairs valued at yen 1,829,917, the average price per pair being slightly over one-half yen, or between 25 and 30 cents in American money.

In the mechanical rubber goods trade, the Japanese industry is not so highly developed as in such lines as tires and footwear. Export statistics covering woven belting for machinery and woven hose, presumably including rubber-covered belting and hose, show that the exports amounted to 183,204 kin valued at yen 256,224 in 1921, 118,738 kin valued at yen 260,685 in 1922, and 102,600 kin valued at yen 226,856 in 1923, indicating a downward tendency in this trade. Shipments of rubber belting, hose, and packing from the United States to Japan have been as follows in recent years:

	Rubber Belting		Rubber Hose		Rubber Packing	
	Pounds	Value	Pounds	Value	Pounds	Value
1922	38,009	$18,977	45,826	$18,047	121,663	70,218
1923	65,961	40,576	131,052	44,323	216,012	92,589
1924 (11 mo.)	146,762	81,716	282,064	94,738	222,954	90,817

Exports of Rubber Toys

Another class of rubber goods for which Japanese export statistics are available is rubber toys, which were exported to the value of yen 1,248,621 in 1921, yen 1,611,982 in 1922, and yen 1,128,768 in 1923, the average value of the annual export trade for these three years being about $660,000.

Present exchange is a very serious damper to import business in all commodities and the resulting increase in the Yen price of crude rubber imported to Japan to supply the industry has caused a rise in price in rubber manufactures generally, the increase in some lines, particularly rubber footwear being as much as 50 per cent. This has resulted in a lessening of sales and some of the smaller rubber companies with limited funds are slowing up their output or suspending operations entirely. This is due in part to the fact that some of the companies which had good stocks of crude rubber at old exchange rates have been able to undersell the articels produced with rubber imported since the exchange rate fell to its present low level.

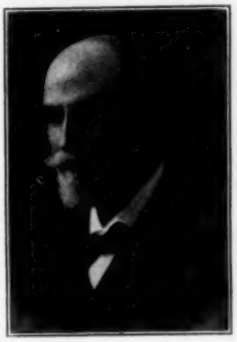
List of Manufacturers Available

A carefully prepared list of 50 leading rubber manufacturing companies in Japan, with the latest obtainable data on the capitalization and the character of goods manufactured by each, has been forwarded by Commercial Attache Butts. This list has been prepared from directories being used and cross checked, and therefore gives the new addresses of such firms as have re-established themselves since the earthquake. While not complete, the list contains practically all of the companies with a capitalization of more then Yen 106,000 paid in, copies may be secured from the Commercial Intelligence Division of the Bureau by interested American firms.

VULCANIZATION & ACCELERATORS

By Andre Dubosc

PART II (*CONTINUED*)



Natural and Mineral Accelerators

The Role of Vitalizers or Sulphuretted Hydrogen Accelerators in Vulcanization—The Action of Mu and Delta Sulphur—Experiments of Bernstein and Heilbronner with the Mechanism of Vulcanization

IT is, of course known that this gas, under certain definite conditions, is susceptible to decomposure during the progress of vulcanization, with the formation of colloidal sulphur. The action of the resinous matter on the vulcanization operation must then be very clear from these results. If these resinous substances are removed from the crude rubber, it is necessary to supply some substance in their stead which is capable of giving sulphuretted hydrogen by reaction with sulphur. Or a substance should be used in the rubber mixture which possesses the property of decomposing with the formation of colloidal sulphur, as for example, pentasulphide of antimony. It has been found that when samples of crude rubber are deprived of their resinous content by extraction with acetone and then mixed with pentasulphide of antimony and subsequently vulcanized in the normal manner, vulcanized products are obtained whose properties are excellent.

Tests with Resinous Matter

Another series of tests was carried out with samples of crude rubber from which the resinous matter had been extracted with acetone in the usual manner. These samples of resin-free rubber were mixed with sulphur and at the same time from three to four per cent of the resinous matter obtained from extracting other samples of rubber or from four to five per cent of resinous Borneo rubber may be added. Such a mixture will vulcanize perfectly and will give the same results from the standpoint of resistance to rupture as if the rubber had not been subjected to acetone extraction at all.

Moreover in practical work these facts have been fairly well known, although no attempt was made to investigate the phenomena so as to arrive at a scientific explanation of them.

In order to determine just what is the action of the sulphur on a sample of rubber from which the resinous matter has been extracted, another experiment was carried out. A sample of acetone-extracted rubber was taken and mixed with sulphur. The mixture was then placed in a round-bottomed flask which was provided with a tube for leading away the products formed during the test. This tube was connected with a wash bottle containing a solution of acetate of lead. The temperature of the contents of the flask was raised up 135 degrees, approximately the temperature of vulcanization. Sulphuretted hydrogen gas is evolved in this case just as well as when the sulphur was admixed with resinous matter derived from crude rubber, but the quantity of the evolved gas was much less than in the former case.

Where has the sulphur been able to obtain the hydrogen gas which is so essential for the production of sulphuretted hydrogen? Has it not been able to derive this gas from the rubber itself?

It is more than probable that the sulphur reacted with the methyl groups in the rubber molecule, which exists there in the chain form, and that the dimethyl cyclo-octadiene has been transformed into octadiene, which is to say into butadiene of ordinary rubber. Moreover the rubber which has been heated in this manner will not be vulcanized in any sense of the word.

On the other hand if litharge is added to it, it will give a mixture that will vulcanize without any difficulty at all. The latter chemical affords the oxygen, which is necessary for the production of sulphurous acid, sulphur dioxide, which then by reacting with the sulphuretted hydrogen, will produce colloidal sulphur, delta sulphur, which is the active agent in the vulcanization of rubber.

Necessity of Sulphur Dioxide

That the presence of sulphur dioxide in the mixture is necessary for vulcanization, has been recognized by Matthew and Strange, as may be seen from the British Patent, No. 2070 of January 26, 1914 in which it is mentioned that such is the case. In this patent specification the inventors speak of making sulphur dioxide, in the liquified condition react on a solution of butadiene rubber in benzine, with the purpose in mind of making this kind of rubber susceptible to vulcanization.

Rubber, as Beychler has stated, is one of the substances, which possesses the property of absorbing sulphur dioxide and sulphuretted hydrogen with the greatest of ease. The two gases, if they are generated at one and the same time, are distributed throughout the entire mass of rubber in the same degree, and, consequently, the product of their reaction, which is collodial sulphur, is also evenly distributed throughout the mass of rubber.

Converting Sulphur into Sulphuretted Hydrogen

The author has shown above that he has considered that the formation of sulphuretted hydrogen and sulphur dioxide from the sulphur that is mixed with the rubber as one of the principal factors in vulcanization. This may be called his own theory of the process of rubber vulcanization. He then busied himself with experiments, the purpose of which was to determine if it was not possible to isolate a certain number of substances, which, when added to rubber containing no resinous matter, would be able to act in its place and play the role of a sulphur conversion agent, changing the latter into sulphuretted hydrogen.

To these substances the author has assigned the name of vitalizers or sulphuretted hydrogen accelerators. Among these substances may be mentioned the following:—alpanaphthylamine, betanapthol, camphor, napthenic acid, aluminum, naphthenate, ammonium sulphophenate, acetanilide, monobenzylamine, sawdust, hydroxylamine, hydrazine, salol, terpene, trioxybenzene, paratoluidine, etc.

Twiss, in his study on the chemistry of vulcanization, has contested the theory of the part played by colloidal rubber in the vulcanization process. He has assumed from the tests

which he made on this matter that amorphous insoluble sulphur, or sulphur mu, is the type of sulphur that vulcanized the rubber gum more slowly than soluble amorphous sulphur or sulphur lambda.

According to him, the following results were obtained from these experiments.

Mixture	Duration of the digestion under forty pound pressure	Residual free sulphur
Rubber, 100 parts Soluble lambda sulphur, 10 parts	120 minutes	8.39
Rubber, 100 parts Insoluble mu sulphur, 10 parts	120 minutes	8.81

Although the differences in the percentages of the sulphur that remained after the vulcanization of rubber was very small, the experimenter has concluded from the experiments which he made on this subject that the theory of vulcanization that he has just described is inaccurate. Twiss made an error.

The author has never held to the view that the insoluble amorphous sulphur, known as mu sulphur, which is prepared in advance and then incorporated with the rubber gum by mixing between the mixing rolls, possesses the power to play a role of greater importance from the standpoint of the vulcanization process than any other variety of sulphur. The author has simply said that the colloidal sulphur which was prepared by Dubus, and which originates from the reaction that takes place between sulphuretted hydrogen and sulphur dioxide, when it is formed within the mass of rubber during the progress of the vulcanization process, is the sulphur which appears to be the indispensable factor in the vulcanization of rubber.

The two forms of sulphur, known as delta sulphur and mu sulphur, moreover, represent two allotropic states of the element sulphur. These are quite different from one another and the properties of the sulphur in these two allotropic conditions are absolutely distinctive.

Mu Sulphur and Delta Sulphur

Delta sulphur, far from being insoluble in various solvents as in the case of mu sulphur, is even soluble in water, which makes Spring consider it as a sort of hydrate of sulphur. The methods that are employed in the preparation of this form of sulphur and the properties of the allotropic variety of sulphur itself have been described by Engel (See Comptes rendues, 1891, volume 112, page 8667) and by Riffo (See Zeitschrift Ind. Kolloid, 1908, volume 2, page 358), by Himmelbauer (See Zeitschrift Ind. Kolloid, 1909, volume 4, page 307), by Weimarn. (See Jor. russ. Phy. et Chem., 1910, volume 42, page 307) and finally by Lumiere in 1919.

Moreover delta sulphur is found in the mass of rubber that is vulcanizing. It occured there in the nascent state, and this fact is also not without significance.

Even if it would be admitted that in the reaction that takes place between sulphurous acid (sulphur dioxide) and sulphuretted hydrogen this type of sulphur, namely delta sulphur, is not formed and that only the insoluble, amorphous variety of sulphur, known as mu sulphur, is produced, nevertheless the mu sulphur, because it exists in the nascent state, plays a very important role in the vulcanization of the rubber gum. This is verified by Bernstein and Heilbronner.

Work of Bernstein and Heilbronner

"Smith and Weigand," these two investigators say, "have observed that the variety of sulphur which is known as soluble, when dissolved in any solvent whatever, will be transformed in the first place into colloidal sulphur and will then be precipitated. Now when a solution of sulphur in any solvent to which a certain amount of sulphur has been added is exposed to the action of the ultra violet rays, it has been observed that no precipitation takes place and furthermore, there is not even a trace of cloudiness in the solution. If, under these conditions, as is held by Wiegand and Smith, a certain quantity of insoluble sulphur is formed from the soluble variety, it may be concluded that this variety of sulphur, in proportion to the amount of the sulphur that is formed in this manner, combines with or is absorbed by the rubber, due to the fact that it is in a nascent state. This is what effects the vulcanization of the rubber.

The nascent state of insoluble sulphur appears to be a condition, which if it is not indispensable, at least is very favorable to the vulcanization of the rubber gum, for it has not been possible to obtain effective vulcanization of rubber, when a solution of sulphur in a proper solvent to which a certain amount of sulphur has been added and is held in suspension is subjected to the action of the ultra violet rays. In this case the sulphur is of the mu variety and is employed in a state of very fine subdivision. The preceding facts explain likewise the mechanism of the vulcanization of rubber at a high temperature. In this case the vulcanization is carried on at a temperature at which a part of the sulphur that is used in the experiment is transformed into insoluble colloidal state. This sulphur is also in the nascent condition."

This long parenthesis has been inserted for the purpose of proving in a satisfactory manner the contention that the colloidal state of the sulphur is the important condition as far as the potency of the role played by sulphur in the vulcanization of rubber is concerned. It also has shown that it does not make any difference from this standpoint whether the sulphur is in the soluble or the insoluble condition. It has also been shown what part the resinous matter that is contained in natural sulphur plays in the vulcanization process and it has been pointed out how these resinous matters facilitate the reactions which have been explained above and which give rise to the colloidal sulphur being formed directly in the mass of the vulcanizing rubber and furthermore well distributed through that mass so that every part of the rubber is subjected to uniform vulcanization.

Effect of Time and Temperature

A series of experiments which were carried out by Spence and Young have shown that under abnormal conditions of time and temperature the resinous matters that are contained in the natural rubber do not stop their favorable action on the vulcanization process. In these experiments Spence and Young took some plantation rubber, which had first been subjected to exhaustive extraction with acetone, and in this way had been completely freed of its resinous content, and made up with this rubber the following mixtures.

In the first place mixture A contained ninety parts of the acetone-extracted rubber and ten parts of sulphur. Then mixture B was made up so as to contain eighty parts of the rubber extracted with acetone, ten parts of the residual matter that was obtained from the evaporation of the acetone solution recovered from the rubber extraction process and that consisted of the original resinous matter present in the natural raw gum, and finally another ten parts of sulphur.

Both these rubber mixtures were then vulcanized in a thermostatically controlled oven, and the vulcanization was continued for a very long period of time. The time of vulcanization was ninety days and the temperatures at which the processes were carried out were 65, 70 and 75 degrees C. After ninety days of vulcanization at a temperature of 75 degrees C, mixture A, which was made from rubber from which the resinous content had been removed, did not contain any more than 0.32 per cent of combined sulphur. It was therefore not vulcanized.

Results of Mixture B

On the other hand mixture B, which contained ten per cent resinous matter, gave the following results.

Time	Temperature	S. combined %	Temperature	S combined %	Temperature	S combined %
15 days	65	0.564	70	1.13	75	1.71
35 days	65	1.460	70	2.60	75	3.80
90 days	65	1.460	70	2.60	75	9.36

The effect of the presence of resinous matters in the rubber on the vulcanization of the same is therefore established in accordance with actual experiments in an indisputable manner. On the other hand a rubber, from which all the resinous matter has been removed, does not fix any more than 0.35 per cent of sulphur after being heated to a temperature of 75 degrees C for a period of ninety days. Then again a rubber which contains ten per cent of resinous matter when subjected to the same treatment for the same period of time and at the same temperature will fix 9.36 per cent of sulphur.

In the next installment of this series Andre Dubosc discusses the accelerating action of proteins on vulcanization and proves that rubber gums that are rich in proteins vulcanize more rapidly.—The Editor.

TECHNICAL ABSTRACTS

Mechanical **Chemical** **Physical**

Vulcanization of Rubber

The vulcanization of rubber by the Hancock method was investigated as follows. Thin sheets of raw rubber, which were fastened to the end of a glass rod, were dipped into melted sulphur which was contained in a test tube. This test tube was immersed in the vapors of liquids that boil at the following temperatures, 128 to 129 degrees C, 137 to 138 degrees C and 148 to 149 degrees. The rod was withdrawn at intervals, and the percentage of acetone-insoluble sulphur in the vulcanized product was determined. Thus curves that were obtained in this manner for the absorption of sulphur were not typical absorption curves, as they exhibited at a temperature of 128 to 129 degrees C, and at 137 to 138 degrees C first a slow and then a more rapid increase in the rate of absorption, and finally a constant value was attained, showing that saturation had occurred.

At a temperature of 148 to 149 degrees C the curve was of the same type up to 57 per cent of insoluble sulphur. Above this temperature a sharp rise took place till the curve reached a much higher maximum. The quantity of chemically combined sulphur, which is not oxidized by means of bromine water, per hundred parts of rubber was next determined.

At a temperature of 148 to 149 degrees C curves showing increase in chemically combined sulphur with time of immersion showed three breaks, pointing to the formation of the four following compounds: $(C_{10}H_{16})_4S$, $(C_{10}H_{16})_4S_2$, $(C_{10}H_{16})_4S_4$ and $(C_{10}H_{16})_4S_8$. The curve at 137 to 138 degrees C was of similar type but the compounds appear to be as follows: $(C_{10}H_{16})_{20}S$, $^{12}S^{32}(^{91}H^{91}O)$ $(C_{10}H_{16})_4S_2$ and $(C_{10}H_{16})_4S_8$. It is interesting that a compound $(C_{10}H_{16})_4S_3$ is also obtained by cold vulcanization. At a temperature of 129 degrees C the compounds are $(C_{10}H_{16})_{20}S$, $(C_{10}H_{16})_4S_2$ $(C_{10}H_{16})_4S$. From the above it is concluded that the Hancock method of vulcanization is essentially the same as the Goodyear method, namely, an adsorption of the sulphur, bu that the former method, being much slower, allows more time for the formation of definite chemical compounds. *Journal of the Russian Physical Chemical Society,* volume 53, pages 109-119.

Role of Enzymes in Coagulation

The use of rubber latex is the direct manufacture of rubber articles in the rubber mill is becoming of increasing importance and therefore any piece of research that has to do with the properties of the latex and with the effects that are exerted by the different constituents that are found in it is of great interest to the rubber man to-day. The following abstract is taken from a report of a series of experiments which were made to determine what role the enzymes played in the coagulation of Hevea latex. This report was published in the *Arch. Rubbercultur,* 1924, Number 5.

The view as to the essentially enzymic character of the spontaneous coagulation of Hevea latex is not justified by evidence. The fact that with gradually increasing proportions of acetic acid two regions of coagulation are encountered with an intervening gap is an electrolytic effect and is observable in enzyme-free latex. The occurrence of coagulation in latex to which toluene, thymol, or chloroform has been added is no evidence of enzymic action, because such additions do not effect the bacteria of latex. The enzyme present in latex is not able to effect de-emulsification of the latex, but when this change has been produced by other agencies, the enzyme may induce coalescence although it is not indispensable for this purpose. It is therefore designated "coalase."

Three stages are discernible in coagulation. Creaming is a reversible change caused by gravity; the particles retain their Brownian movement and can be re-dispersed to a stable emulsion. Flocculation is an irreversible change which results on the addition of an electrolyte. The product, often incorrectly described as "cream" consists of minute flocks which do not unite even when kept for days. Shaking will re-distribute the flocks, but does not restore a stable emulsion. Flocculated latex can be made to undergo coagulation into a coherent clot by the action of stronger coagulants.

Hevea latex does contain an enzyme which is able to effect the coalescence of flocculated latex, but the enzyme is unable to effect the flocculation or coagulation of bacteria-free latex. In spontaneous coagulation the process is initiated by bacteria which by decomposition of serum substances produce sufficient acid to effect flocculation, but not sufficient to produce coagulation to a coherent cloth, this stage being completed by the action of the enzyme.

In coagulation as ordinarily practiced with a little acetic acid, the latter effects flocculation, but is insufficient to effect coalescence which follows slowly by the action of the enzyme. Large amounts of avid are able to produce immediate coagulation of the latex. Although the enzyme of Hevea latex is able only to coalesce and unable to effect coagulation, true coagulating enzymes are known, such as papain, which coagulate latex without the acid of any other coagulant.

Rubber Compositions

Refined clay, neutral or slightly alkaline in reaction, is employed as a compounding ingredient for rubber and produces an increased rate of vulcanization and improved mechanical properties of the product. The treatment which is necessary in this case varies with the different types of clay, and substances which act as deflocculators toward some clays may serve as flocculators for others. Clay may be advantageously deflocculated by means of a dilute solution of an alkali carbonate, hydroxide or pyrophosphate, and then reprecipitated by flocculation with the aid of a suitable alkaline base, such as lime, with a weak acid or one of its salts, with sulphuric acid or alum or with a colloid, such as glue. The use of a small quantity of rosin with the alkaline deflocculating agent permits a considerable reduction in the necessary proportion of flocculator such as alum, such reduction being beneficial to the product. By using barium hydroxide as flocculator both agents may be simultaneously precipitated with the clay. British Patent No. 218,364.

Concentrating Rubber Latex

Latex is evaporated in an enclosed shallow pan which is provided with a hot water jacket, by discharging into it heated air from suitable nozzles which are located near the bottom of the pan. The level of the latex is maintained by a supply from a water-jacketed preheating tank. The temperature of the heating water and of the latex may be initially 80 to 88 degrees C and approximately 71 degrees C respectively. The concentration process may be continued until the product contains 72 per cent of rubber, but as this stage is approached the temperature is permitted to fall to 27 to 32 degrees C. In order to prevent premature coagulation ammonia may be introduced with the air during the latter stages of the evaporation. The moisture laden air escapes by an exhaust in the cover of the pan, and any ammonia present can be recovered. Frothing is checked by a blast of air introduced radially inside the exhaust pipe at its junction with the pan. British Patent No. 218,965.

Centrifuging Latex

Rubber latex is subjected to intensive centrifuging for a small number of revolutions (5000 to 10,000) to separate it into two portions containing higher and lower percentages of solids. It is possible in this manner to obtain a portion containing 58 to 60 per cent of solids. British Patent No. 219,635.

EDITOR'S REVIEW DESK

Books **Trade Catalogs** **Articles**

RUBBER, TEA AND CACAO. Compiled and edited by W. A. MacClaren with an introduction by H. Eric Miller, vice-chairman of the Rubber Growers' Association. 334 pp. D. Van Nostrand Co., New York, and Ernest Benn, Ltd., London.

Section I of this comprehensive volume is devoted to the raw rubber industry of the British Empire. The history of the foundation of the plantation industry is told and much space is devoted to its early years. The influx of capital into the industry and its subsequent development is described in an interesting manner. Methods of cultivation, tapping operations, yield and life of the Para rubber tree, preparation of plantation rubber, Ribbed Smoked Sheet and First Latex Crepe are treated at length. The organization of the British rubber industry, with special emphasis on such organizations as the Rubber Growers' Association, occupies many pages.

The Stevenson Plan is not neglected. In discussing it, the history of the rubber slump is given and the administration of the restriction scheme is described. Valuable statistics of rubber production and consumption in the British Empire and in the world are contained in this section. The account of the workings of the London rubber market is very interesting.

* * *

DOW CHEMICALS. 80 pp. 5½" x 7½". Bound in embossed cloth. The Dow Chemical Co., Midland, Mich.

This catalog is presented in a fashion worthy of the best works of literature; it is without a doubt the most artistic volume that has been issued for advertising purposes by any chemical company in a long time. It is not only illustrated throughout with fine halftones printed on cream-colored paper showing various views in the Dow works, but is enhanced by the inclusion of two reproductions in color of oil paintings by A. H. K. Hammond in which all the natural beauty of the works on a summer afternoon has been caught and transferred to canvas by the artist's inspired brush. An especially interesting illustration is the air photograph which shows the vast extent of the company's works at Midland. It is one of the clearest aerial photographs we have ever seen.

The catalog contains sections on pharmaceutical, industrial, heavy and miscellaneous chemicals, dyes and insecticides. Over ninety chemicals manufactured in the Midland plant are listed and described. The foreword, which briefly traces the history of the company, is a worthy introduction to this excellent catalog.

* * *

DRUG & CHEMICAL MARKETS GUIDE-BOOK. 1925 Edition. 4" x 9". 853 pp. Drug & Chemical Markets, 3 Park Place, New York, N. Y.

This guide-book gives to buyers of chemicals and allied products a complete directory of makers, importers and dealers, and a complete buyer's guide of these products and the firms supplying them. It is divided into four parts: Part I consists of a directory of the drug and chemical firms with street addresses. Firms are listed in alphabetical order under the states. Part II is a directory of products in which chemicals, drugs, dyes, essential oils, aromatic chemicals, tanstuffs, pigments, fatty oils and kindred products are listed alphabetically. In addition to giving the supplies, grades, types and sizes of containers are listed, and special shipping regulations are noted.

Part III is a directory of firms with full line of chemical products for which each firm is headquarters. Part IV, which is a directory of price and market statistics, contains back price statistics on some 200 chemicals and allied products, statistical price charts on about 50 important products from 1914 to July, 1923 and six average charts for the important groups. Trade associations in the field and the text of the Fordney-McCumber Tariff Act insofar as it covers chemicals and kindred products are also listed in this part.

Complete indices to text and advertising are to be found in the back of the guide-book.

* * *

DETERMINATION OF RUBBER AND INORGANIC MATERIALS IN SOFT RUBBER GOODS. By R. T. Mease and N. P. Hanna, Bureau of Standards. Published in *Industrial & Engineering Chemistry* for February.

The unsatisfactory results obtained from methods in use for determining inorganic materials in rubber goods call for a new process. This must be accurate, rapid and applicable to a large variety of compounds.

In their article the authors discuss such a method and explain the various steps necessary to a test which will be effective. They recommend first the removal of rubber from the compound by a solution easy of preparation and dissolution, from which chemical action, oxidation and evaporation are absent and which will permit complete separation of the pigment from the rubber by a simple method.

Six steps are given for the complete test, including the extraction of two portions of 0.5 gram of the finely ground sample, the treatment of portion A, the removal of the acid-soluable materials from the flask and Gooch crucible, the determination of the sulfur present as antimony trisulfide,

(*Continued on Page* 346)

CLASSIFIED ADVERTISING

10 Cents a word, minimum charge $2.00, payable in advance. Address replies to box numbers, care THE RUBBER AGE, 225 Fourth Ave., New York.

FOR SALE—Rubber Tire Factory—New. Ready to operate. Modern fire-proof plant for manufacturing of tires, tubes or any rubber commodity. 70,000 feet floor space. Main building 200 by 100, three stories, good for 1,000 to 4,000 tires and tubes per day. Separate power plant, fully equipped, 34 acres level ground, inexhaustible water supply, excellent labor conditions in thriving city of 12,000 population.

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MARKETS

Cottons and Fabrics

NEW YORK, Feb. 16, 1925

Following our last report there was but slight change in the cotton situation. The upward trend of prices reflected principally the persistent demand throughout the South for the rapidly diminishing supply of desirable cotton and also the continuance of the heavy export movement.

Of considerable interest was the statement issued by the Department of Agriculture with reference to the outlook for production next season. The report stated that, with indications pointing to the probability of a continued satisfactory demand for cotton, stocks at the end of the year would not be large and that, assuming a continuance of favorable business conditions during the season 1925-26, the world would appear to be in a position to absorb, at sustained prices, a crop of 12,000,000 to 13,000,000 bales. It was pointed out that there is a distinct possibility of a decrease in the yield per acre of the next crop as compared with the present season but in this case higher prices are likely to be obtained.

Fluctuations Without Significance

During the next week fluctuations were without special significance and although there was evidence of a reactionary tendency, traceable to the sharp break in wheat, to the failure of bullish weather and statistical reports to stimulate outside interest, the liquidation of disappointed longs had but small effect. The apparent stabilization of prices may be largely accounted for by the belief that the recent advance had discounted all bullish features and that supplies will suffice not only for requirements of the current season but also for a substantial carry-over.

Reports from the dry goods trade pointed to a gradual and remunerative expansion of business. Domestic mills have been "calling" cotton more freely and spindle activity is increasing. Southern spot advices were increasingly bullish. To date, the volume of exports exceeds that for the same period in 1923-24 by 40 per cent, indicating a total for the season, should this percentage of increase continue, of more than 8,000,000 bales. The principal argument used in support of the theory that exports may be expected to show a considerable falling off in the near future is that stocks of American cotton in and afloat for European ports are already more than 750,000 bales more than at this time last year and that the economic conditions of the Continent, particularly in view of the necessity for heavy purchases of grain, are not such as to permit further imports except on a moderate scale.

WORLD COTTON CROP PUT AT 23,900,000 BALES

The world cotton crop for 1924-25 was estimated by the Agriculture Department at 23,900,000 bales as compared with 19,500,000 bales last year. This estimate was based on reports to the department from countries providing 98 per cent of the total world cotton crop. Reports of cotton receipts at Bombay, the concentration point in India, for the season to January 28, show a total of 1,003,000 bales against 1,279,000 bales a year ago.

New York Cotton Prices

	Open	High	Low	Last	Close Feb. 2
March	24.17	24.23	24.05	24.16	24.27
May	24.53	24.58	24.4	24.52	24.58
July	24.79	24.82	24.62	24.75	24.85
October	24.65	24.68	24.50	24.60	24.58
December	24.67	24.72	24.51	24.63	24.63

TIRE FABRICS

Fabric mills are working full time on orders for delivery up to the end of March. As yet little demand has materialized for deliveries in the second quarter. The market has been quiet and the price basis unchanged. Carded peeler cords held to 52 to 54 cents and square woven 50 to 52 cents. In several fabric mills small supplies of spot goods in the standard constructions are on hand.

The high price of Egyptian cotton has removed that style from the practical. It was stated that it would be necessary to ask at least 90 cents for combed Egyptian fabric at the prevailing price of the cotton. Mills expect a much better demand for tire fabrics in the second quarter. Few of them have enough business to carry them through to June.

CORD FABRICS

Combed Sakellarides		Nominal	
Combed Peeler	lb.	Nominal	
Carded Peeler		.52 @	.54
Combed Egyptian uppers	lb.	.70 @	.76
Carded Egyptian uppers	lb.	.64 @	.67

SQUARE WOVEN

17¼-ounce Egyptian uppers, combed	lb.	Nominal	
17¼-ounce Egyptian uppers, carded	lb.	.62 @	.65
17¼-ounce Sakellarides, combed	lb.	Nominal	
17½-ounce Peeler, carded	lb.	.50 @	.52

Ducks—There has been a fair amount of business placed for numbered duck which sold at 32½ cents and 5 and 35 and 5 off. There was also good contract business in enameling duck in the widths between 38 and 72 inches. Several contracts for hose and belting duck were placed at less than 45 cents a pound, terms allowed, but no freight. During the last few days the market was quiet and the indications were that buyers had withdrawn for the time being. Prices held nominally unchanged.

(Continued on Page 340)

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

AMERICAN COTTON FABRIC CORPORATION

Cotton Markets

(Continued from Page 339)

Burlaps—There was fair inquiry for lights in the past two weeks, with buyers striving to weaken prices by 5 points without result. The heavies were weaker than 10s but this was considered a passing feature of the market. Shipments during January to the Atlantic Coast of the United States were 63,400,000 yards, Pacific Coast, 4,800,000 yards; and 2,600,000 yards to Canada. On the 14th a moderate rise in primary burlap prices was reflected in the first advance in local quotations in some time.

SHEETINGS

40-inch 2.50-yard	yd.	.16½ @	—
40-inch 2.85-yard	yd.	.14¼ @	—
40-inch 3.15-yard	yd.	.14¼ @	.14⅜
40-inch 3.60-yard	yd.	.11⅞ @	—
40-inch 3.75-yard	yd.	.11⅝ @	—
40-inch 4.25-yard	yd.	.10 @	—

DUCKS

Belting	lb.	.45 @	.47
Hose	lb.	.45 @	.47
Enameling	lb.	.46 @	.51
Shoe Ducks	lb.	.38 @	—
Single filling	lb.	.19 @	.22
Double filling	lb.	.22½ @	.24

BURLAPS
(Carload Lots)

7½-ounce 40-inch	7.80	@	—
8 -ounce 40-inch	7.85	@	7.90
10 -ounce 40-inch	9.30	@	—
10½-ounce 40-inch	9.25	@	9.30

Reclaimed Rubber

NEW YORK, Feb. 16, 1925

The market for reclaimed rubber is not quite as active now as it was several weeks ago. Shipments on old contracts are being made regularly. A better demand is expected momentarily. Prices are firm and show little quotable difference from those reported in our last issue.

Friction (Uncured)			
No. 1	lb.	.28 @	.29
No. 2	lb.	.20 @	.21
High Tensile Black			
Super-Reclaim No. 1	lb.	.17 @	.17¼
" " No. 2	lb.	.12½ @	.12¾
Shoe			
Unwashed	lb.	.09 @	.09¼
Washed	lb.	.12¼ @	.12½
Tube			
No. 1 (Floating)	lb.	.15¾ @	.16
No. 2 (Compounded)	lb.	.10¾ @	.11
Tires			
Black, unwashed	lb.	.08¾ @	.09
Black, washed	lb.	.10 @	.10¼
Dark Gray	lb.	.09½ @	.09¾
Light Gray	lb.	.11 @	.11¼
White	lb.	.14½ @	.14¾
Truck	lb.	.08½ @	.08¾
Miscellaneous			
Mechanical Blends	lb.	.05 @	.06
Red, High Grade	lb.	.13¾ @	.14

Crude Rubber

NEW YORK, Feb. 16, 1925

All the gain made by the market since Jan. 20 was wiped out in a weak and declining session on the 4th when Feb./Mar. deliveries sold down to 34⅛c. Buying then brought back prices almost a full cent to 35 and the market closed steady. The market was without interest for the next four days but prices climbed to 35¾c.

Fluctuations were recorded every day but the net result of these fluctuations meant very little. Sellers are not willing to assume any position until a more definite trend became discernible. Off grades were dull and uninteresting without change of consequence in the levels of prices quoted. The market continued for many days to be backing and filling, with neither buyers nor sellers ready to take a firm position.

Some consuming interest made its appearance on the market on the 13th which had the effect of steadying local conditions, and somewhat improving the immediate outlook. Dealers maintained confidence in the fact that additional stocks will soon be required by consumers especially on the nearby positions. Arrivals from Feb. 1 to 14 were 5,363 tons.

Interest quickened a little toward the end of the week, with some of the large importers apparently in the market to protect their holdings against the slight declines. Bids were revised upward and a few transactions were recorded, with sellers also moving their prices to slightly higher levels. More interest was displayed in nearby than in distant positions but the entire market appeared to be somewhat firmer.

Scrap Rubber

Very little trading is reported in the scrap rubber market and there is no activity. Mills are loaded up with stocks and dealers have large quantities on hand, which condition naturally affects the market. An improvement in weather conditions will increase operations in this market.

Auto tire peelings	20.00	@	—
Standard White auto	ton 16.00	@	—
Mixed auto	ton 13.00	@	—
Bicycle tires	tons 8.00	@	—
Clean solid truck tires	26.00	@	—
Boots and shoes	.01¾	@	—
Aretics, untrimmed	.01	@	—
Aretics, trimmed	.01½	@	—
Inner tubes, No. 1	.04¼	@	—
Inner tubes, compounded	.03	@	—
Inner tubes, red	.02½	@	—
Battery jars, clean hard rubber	.02	@	—
Air Brake Hose	ton 13.00	@	—
Rubber hose	ton 10.00	@	—

NEW YORK MARKET

Plantations—			
Ribbed Smoked Sheets.			
Spot	.36½	@	—
March	.36½	@	—
Apr.-June	.36⅜	@	.36½
July-Sept.	.36½	@	—
Oct.-Dec.	.35½	@	—
First Latex, crepe, spot	.37¼	@	—
Amber Crepe No. 1, spot	.36⅞	@	—
" " No. 2,	.35	@	—
" " No. 3,	.34⅞	@	—
Brown Crepe, Rolled	.35½	@	—
" " Clean, thin	.36¼	@	—
" " Specky	.35⅞	@	—
Scrap, Colombo No. 1	Nominal		
Pontianac—			
Bangermassin	Nominal		
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	Nominal		
Paras—			
Up-river Fine	.34¼	@	—
" Medium	.29½	@	—
" Coarse	.26¼	@	—
Islands, fine	.30¾	@	—
Madeira Fine	.33½	@	—
Acre Bolivian, fine	.33	@	—
Cut Beni Bolivian, fine	nominal		
Tapajos, fine	.30½	@	—
Caucho Ball—			
Upper, shipment	.27	@	—
Centrals—			
Central, scrap, prime	.28	@	—
Central, scrap, prime	.25	@	—
Corinto, scrap	.26½	@	—
Esmeralda, sausage	.26	@	—
Guayule, w and d	.32	@	—
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Kassai, Prime Red	Nominal		
Balata—			
Block, Colombia	.50½	@	—
" Cuidad	.61½	@	—
Surinam, sheet	.75	@	.77
Gutta Percha—			
Siak	.17	@	.18
Red Macassar	3.00	@	3.20
Chicle—			
Mexican, Yucatan	.65	@	—

LONDON MARKET

Standard Ribbed Smoked Sheets—	
Spot	17¾d
March	17⅞
Apr.-June	17⅞
July-September	17⅞

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—	
Spot	17½
March	17⅝
Apr.-June	17
July-December	16¾

NEW ENGLAND SOUTHERN MILLS

MANUFACTURERS OF TIRE FABRICS

This group of Mills is thoroughly equipped to produce coarse builders, breakers and chafers in all grades of cotton, in yarn numbers ranging from 4's to 30's in order to meet the demand for coarser yarns and lower cost fabrics.

LAWRENCE & CO., SELLING AGENTS

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CHEMICALS & COMPOUNDING INGREDIENTS

Accelerators — Colors — M.R. — Compounding Ingredients Softeners — Vulcanizing Ingredients — Rubber Substitutes

NEW YORK, February 17, 1925—The short month and poor weather are blamed for the slight falling off in demand from rubber manufacturers. "Fair" characterizes the chemicals at this time but it is freely expected that a distinct improvement will be felt shortly. Present low shipments (compared with December and January) indicate to some a lessening in production next month. Prices are firm with only a few changes noted.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .93 @	.95
Aniline oil, drums	lb.	.17 @	.17½
Di-Ortho-Tolylguanidine	lb.	1.26 @	—
Diphenylguanidine	lb.	1.05 @	1.15
Excellerex,	lb.	.35 @	.40
Formaldehyde-Aniline	lb.	.40 @	.45
Hexamethylene-tetramine	lb.	.85 @	—
Paraphenylenediamine	lb.	1.30 @	1.40
Piperidine-Piperidyldithio-Carbamate	lb.	5.00 @	—
Super-Sulphur No. 1	lb.	.50 @	—
Super-Sulphur No. 2	lb.	.18 @	.30
Tensilac, No. 39	lb.	.80 @	—
No. 40	lb.	.75 @	—
Tetramethyl— Thiuramdisulphide	lb.	4.50 @	6.00
Thiocarbanilide, kegs	lb.	.26 @	.30
Vulcone	lb.	.89 @	—

Inorganic

Lead, sublimed blue	lb.	.10 @	—
Lead, white	lb.	.11½ @	—
Litharge, domestic	lb.	.12¾ @	—
Lime, superfine	lb.	.01½ @	.02
Magnesia, calcined, light,	lb.	.24 @	.25
extra light	lb.	.45 @	.60
heavy	lb.	.04¾ @	.07

COLORS

Blacks

Arrow "Aerfloted"	lb.	.06¼ @	.10
Bone Black	lb.	.05½ @	.09
Carbon "	lb.	.06 @	.10
Drop "	lb.	.06 @	.14
Ivory "	lb.	.12 @	.45
Lamp "	lb.	.12 @	.40
Micronex	lb.	.07 @	.12
Thermatomic carbon	lb.	.04 @	.08

Blues

Cobalt	lb.	.21 @	.26
Prussian	lb.	.35 @	.37
Ultramarine	lb.	.08 @	.35

Browns

Iron oxide	lb.	.02¼ @	.06¼
Sienna, Italian,	lb.	.04 @	.14
Umber, Turkey	lb.	.04 @	.06
Vandyke, domestic	lb.	.03 @	.03½

Greens

Chrome, light	lb.	.29 @	.31
medium	lb.	.30 @	.32
dark	lb.	.31 @	.34
Commercial	lb.	.10 @	.10½

Reds

Antimony crimson, 15/17 F.S.	lb.	.35 @	.39
sulphur free	lb.	.45 @	.60
golden, 15/17 F.S.	lb.	.16 @	.19
calcium and sulphur free	lb.	.40 @	—
red sulph.15-17 F.S.	lb.	.16 @	.20
Indian, English	lb.	.08 @	.12
Para toner	lb.	.90 @	1.00
commercial	lb.	.14 @	.15
Red oxide, reduced	lb.	.04 @	.12
pure	lb.	.12 @	.14
Toluidine toner	lb.	1.80 @	2.05
Venetian red	lb.	.03 @	.05
Vermillion, quicksilver, English	lb.	1.40 @	1.45
domestic	lb.	.15 @	.25

Whites

Albalith	lb.	.06⅜ @	.06⅝
Aluminum bronze		.60 @	1.25
Lithopone, Akcolith	lb.	.06¼ @	.06¾
Lithopone Azolith	lb.	.06⅛ @	.06⅝
Zinc Oxide—American Process XX red	lb.	.07¾ @	.08¼
Kadox, black label, bags, cars		.11⅝ @	.11⅞
blue " " "		.10⅝ @	.10⅞
red " " "		.09⅝ @	.09⅞
American Azo: ZZZ (lead free)	lb.	.07¾ @	.08¼
ZZ (under 5 per cent leaded)	lb.	.07 @	.07½
Z (8-10 per cent leaded)	lb.	.06¾ @	.07¼
Zinc Oxide—French Process White seal	lb.	.12 @	—
Green seal	lb.	.10¾ @	—
Red seal	lb.	.09¾ @	—

Yellows

Chrome, light		.19½ @	.21
dark and medium	lb.	.19½ @	.21
Cadmium Sulphide	lb.	2.00 @	2.50
Ocher, French medium	lb.	03 @	.03½
domestic	lb.	.01½ @	.02½

COMPOUNDING INGREDIENTS

Aluminum Flake	ton	21.85 @	24.50
hydrate light	lb.	.17 @	.18
Ammonia carbonate	lb.	.13½ @	.14½
Asbestine	ton	18.00 @	20.00
Barium carbonate	ton	63.00 @	65.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	15.00 @	18.00
Western prime white	ton	22.00 @	23.00
imported	ton	28.00 @	38.00
Basofor	lb.	.04¼ @	—
Blanc fixe, dry f.o.b. works	lb.	.04 @	.04½
Carrara filler	lb.	.01¾ @	.02
Chalk, precipitated, extra light	lb.	.04¼ @	.05
heavy	lb.	.03¼ @	.04
Clay, China, domestic,	ton	15.00 @	25.00
Dixie	ton	20.00 @	35.00
Blue Ridge	ton	9.00 @	—
Langford	ton	12.00 @	22.00
Glues, extra white	lb.	.21 @	.29
medium white	lb.	.19 @	.25
cabinet	lb.	.16 @	.25
cabinet low grade	lb.	.14 @	.18
common bone	lb.	.11 @	.14
Graphite flake, bbls.	lb.	.06½ @	.12
Lump	lb.	.04 @	.07
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Liquid latex	gal.	1.25 @	1.35
Magnesia, carbonate	lb.	.07⅛ @	.07¼
Mica, powdered	lb.	.07 @	.15
Rotten Stone (powdered)	lb.	.02½ @	.04½
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	4.12 @	4.39
Talc, domestic	ton	13.00 @	22.00
French	ton	18.00 @	22.00
French, high grade	ton	38.00 @	45.00
Italian	ton	45.00 @	55.00
Terra Alba	cwt.	1.25 @	2.00
Tripoli, white	lb.	.02 @	.02¼
Whiting, commercial	cwt.	1.00 @	1.15
gilder's bolted	cwt.	1.25 @	1.35
English cliffstone	cwt.	1.50 @	—
Paris whiteAmerican	cwt.	1.25 @	1.50
Quaker	ton	13.00 @	15.00
Sussex	ton	8.00 @	10.00
Wood pulp XXX	ton	35.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	35.00 @	45.00
Hard hydrocarbon	ton	29.00 @	35.00
320/340 M. P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M. P. hydro-carbon (c.l. factory)	ton	42.00 @	47.00
Synpro, granulated, M. R. (factory)	ton	55.00 @	70.00

SOFTENERS

Acids

Acetic, 28%	cwt.	3.12 @	3.37
Cresylic, 97%	gal.	.62 @	.65
95%		.58 @	.61
Muriatic, 20%	cwt.	.80 @	.90
Nitric, 36 degrees	cwt.	4.25 @	4.50
Sulphuric, 60 degrees	ton	9.50 @	10.50
66 degrees	ton	14.00 @	15.00
Tartaric, crystals	lb.	.29 @	—

Alkalies

Caustic soda, 76%	cwt.	3.20 @	—
Soda ash, 58% C.L.	cwt.	1.43 @	1.45½

Oils

Castor, No. 3, bbls.	lb.	.16½ @	—
Chinawood, bbls.	lb.	.14 @	.14½
Corn, crude, bbls.	lb.	.12¼ @	—
refined	lb.	.13½ @	.14
Cottonseed, crude		.09⅛ @	.09¼
Glycerine C.P. Drums	lb.	.19 @	.19½
Linseed, RawC.L.bbl.	gal.	1.13 @	—
Palm, Niger	lb.	.08¾ @	—
Lagos	lb.	.09½ @	—
Peanut,domestic,crude	lb.	.13 @	—
Petrolatum, white		.13 @	.13½
amber		.04 @	.04¼
dark amber	lb.	.03¼ @	.04
Pine, steam distilled	lb.	.65 @	.66
Rapeseed, refined	gal.	.92 @	.93
blown	gal.	1.05 @	—
Rosin, first rectified	gal.	.51 @	.52
second rectified	gal.	.53 @	.54
Soya Bean, crude		.11 @	.11¼
Tar, commercial	gal.	.30 @	.32

Resins and Pitches

Parra M.R.	lb.	.06 @	.07
Tar Retort	bbl.	13.50 @	14.00
kiln burned	bbl.	13.50 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	gal.	.05½ @	.06
pine	bbl.	6.00 @	—
Rosin, grade K	bbl.	8.65 @	—
Shellac, Superfine orange	lb.	.67 @	.68

Solvents

Alcohol, denatured, No. 1 bbls.	gal.	.61 @	.65
Benzol, 90%	gal.	.23 @	—
pure		.25 @	—
Carbon bisulphide	lb.	.06 @	.07
tetrachloride	lb.	.06¾ @	.07¼
Dimethylaniline	lb.	.33 @	.36
Motor gasoline, steel bbls.	gal.	.21 @	—
Naptha, V. M. & P.	gal.	.17¾ @	—
Toluene	gal.	.26 @	—
Turpentine, spirits	gal.	.84 @	.95
wood	gal.	.80 @	.82

Waxes

Bayberry	lb.	.21 @	.22
Beeswax	lb.	.55 @	.65
Carnauba, No. 1	lb.	.35 @	.39
Ceresin, white	lb.	.09 @	.10
Montan, crude	lb.	.06 @	.06⅛
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
Paraffine White,A.M.P.	lb.	.05⅞ @	.06
Yellow A.M.P.	lb.	.06⅛ @	.06¼
Sweet wax	lb.	.12 @	—

SUBSTITUTES

Black		.08 @	.15
White	lb.	.09 @	.15
Brown	lb.	.10 @	.15
Brown factice	lb.	.09 @	.18
White factice	lb.	.09 @	.16

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.18 @	.20
Sulphur Chloride (drums)	lb.	.04½ @	.05
Sulphur flour Commercial bags,	cwt.	1.35 @	1.70
" bbls.	cwt.	1.70 @	—
Superfine, bags	cwt.	2.00 @	2.40
" bbls.	cwt.	2.40 @	2.90
100% pure, refined, bags	cwt.	2.35 @	2.90
bbls.	cwt.	2.60 @	3.15

The Market Place

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EDITOR'S REVIEW DESK

(*Continued from Page* 338)

the determination of barytes, and the treatment of portion B for sulfur in compounding materials.

A comparison of results should also include the calculated and determined specific gravities, which will show any errors made in compounding samples.

A modification of method outlined has been used successfully for quantitatively separating rubber compounds from frictioned rubber goods, examining fibers used in weaving the fabric and analyzing the rubber compound.

* * *

FOOTE IXL SPEED REDUCERS, Catalogue No. 25. 8½" x 11". 79 pp. Foote Bros. Gear & Machine Co., Chicago, Ill.

Speed reducers are applicable to a variety of manufacturing equipment. Over a term of twenty years the publishers of this catalogue have seen their product installed on mill, automobile and mining machinery, the rubber industry having found it of value for conveyors, rolls and mixers.

As a safety device the speed reducer has demonstrated its value, obviating the danger encountered from open gears, belts and chains. In a concise statement an explanation is given of the various types made, together with an approximate summary of the range of reduction ratios that may be obtained from the various types.

Design, specification, weights, and a full description of method of mounting are given, as well as a detailed price list. The catalogue is amply illustrated.

* * *

WHAT WE LEARNED FROM A "GRAVEYARD OF IDEAS." By Robert C. Kelley, Manager Waste Control, Carton and Fabric Cutting Depts., Converse Rubber Shoe Co., Malden, Mass. Published in *Factory* for February.

The attempt of the Converse Rubber Shoe Co. several years ago to install an efficient method for inspecting and packing goods for delivery was productive of the lesson that sweeping changes must come slowly and must not bring systems more efficient than the foreman and inspectors enforcing them.

To grasp this fact the company had first to go to the expense of installing a system that necessitated the use of equipment such as conveyors, trays and benches and to see these articles find their way to the storehouse, after the services of the efficiency engineers had terminated, and there was no one with interest enough to continue the operation.

Salvaging the equipment brought to the author the question as to why the system had failed and an extended trip through factory centers in the middle west proved a revelation. For everywhere he found machinery discarded because of similar failure. The conclusion he reached was that no system is stronger than its operators.

Differing with Taylor in the specialization of a "gang," "speed" and "inspection" boss, the author advocates the enactment of the one-man idea, making the foreman responsible for the work of his unit, and discarding the idea of an independent inspection department. The use of defective material is charged to the making department, the only faults for which the mill and preparation departments are held responsible being invisible defects which come in vulcanization. This compels the making departments, through their inspectors, to guard against the use of defective material and keeps other departments on the watch.

While every factory has its chemical laboratory where raw materials are tested, the real burden rests with the workman. The man who mills or warms the calender may work the batch a trifle too much and burn the stock. His knowledge of this is not arrived at through a device but only through the touch that comes with experience. Uniform quality, however, is generally assured by the system of hopper bins, which are kept locked and where the weighing out of the mixture is done by three people.

Free insurance and general welfare work, run by the workers themselves, are other factors that the author feels brings into the manufacture of a product the human element. The interest of foremen in their men, and the encouragement given to employees to bring their friends into the organization, are among the things that determine the excellence of a product, which can only measure to the calibre of the men producing it.

* * *

STUDIES OF THE PHYSICAL PROPERTIES OF BALATA AND RUBBER. By C. R. Park, Goodyear Tire & Rubber Co., Akron, Ohio. Published in *Industrial and Engineering Chemistry* for February.

Balata, although used in great quantities in the manufacture of certain trade articles, has been the subject of little investigation. This near-relative of rubber has yet to have its literature. Because of the dearth of knowledge regarding the physical properties of this product, the author has undertaken an investigation and hopes that it may stimulate further research in this field.

Balata used in the tests was from shipments of Venezulean block. The crude block was washed and freed from resins by dissolving in hot gasoline and chilling, holding the resins in solution and producing the balata as a firm white precipitate. This was repeated three times. The precipitated balata was then milled into sheets. The final material had an acetone extract of about 0.5 per cent and was almost white. The rubber was ordinary pale crepe. Other materials were standard commercial products.

The properties of balata show some very remarkable analogies to the behavior of rubber. Rubber upon freezing becomes opaque. Balata also changes from a plastic, transparent form to a solid, opaque form upon moderate cooling. Chilled samples of unvulcanized rubber stretched in exactly the same way as balata does at ordinary temperatures.

The effect of adding rubber showed that the tensile and yield values were lowered, while vulcanization decreased the tensile strength of samples high in balata and increased the tensile for samples high in rubber. The yield value was lowered in all cases.

It has recently been noted that a sudden change in specific gravity takes place upon heating rubber that has been stored at low temperatures. This is popularly known as "frozen" rubber. This change is also accompanied by a softening of the rubber and a regain of transparency. A similar change, more marked, however, is noted when balata is heated.

* * *

JONES POWER TRANSMISSION MACHINERY. Catalog No. 31. 5¼" x 7½". 80 pp. W. A. Jones Foundry & Machine Co., Chicago, Ill.

The Jones line of power transmission machinery has been developed to its present high standard as a result of more than 30 years effort. The company does a great deal of research and experimental work to keep each piece of machinery up to date.

Pictures of the tool room, the pattern shop, the foundry and the machine shop in the Jones factory add interest to this catalog which is also amply illustrated throughout with plates of the various transmission appliances. An index to the many hundreds of items included in the catalog increases the value of the catalog.